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TEXTILE WORLD RECORD

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Table of Contents Page 63 Buyers Index Page 163 Index to Advertisements Page 173

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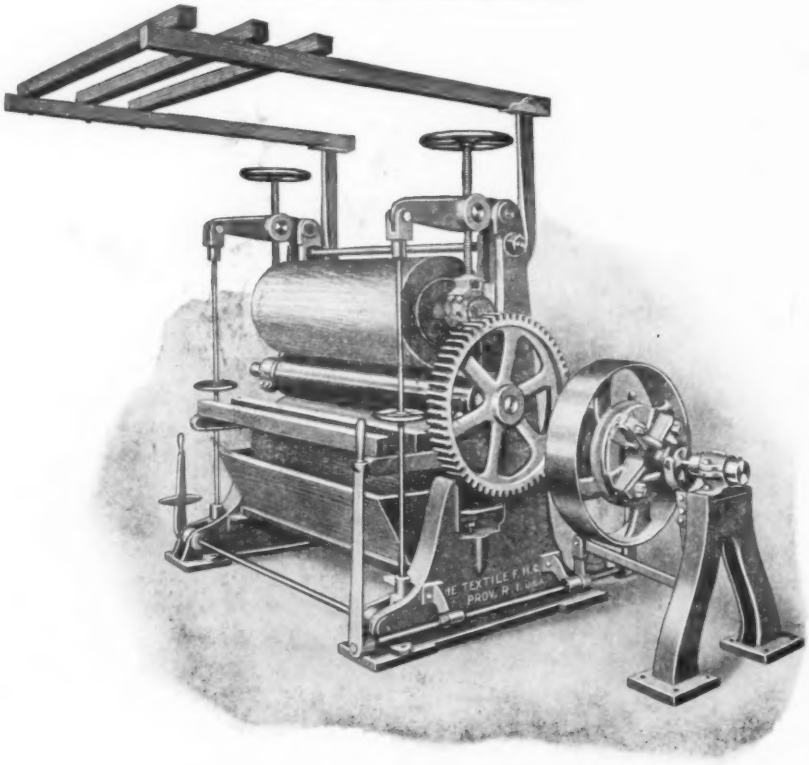

3-roll Mangle or Calender with new open style frame

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Contents for November

PAGE

Monthly Comment 65
National Association of Woolen and Worsted Overseers 68
The Manchester Machinery Exhibition 69
The Textile Publicity League 72
Felted Wool Under the Microscope 75
Uniform Cloth for the French Army 77
Mill Experiences 78
Cotton Cards 80
Silk Plush Novelties 82
CORRESPONDENCE AND NOTES 84
A Hand Book of Weaves—English Notes—As Punch sees Bradford—Removing Spots and Stains from Textiles—Notes on Cotton Cards—Calico Printing and the British Cotton Industry—Crossed Warp Effects—Chameleon Taffetas—Carbon Tetrachloride.
QUESTIONS AND ANSWERS 104
KNITTING DEPARTMENT 110
The Knit Goods Situation—Defects in Knit Cloth—The "Hoff-man" Twin Press for Knit Goods—Knitting Machine for Zigzag Patterns—A Circular Rib Knitting Machine—Accordion Knitted Neckties.
DYEING, BLEACHING, FINISHING, ETC. 119
Sulphur Colors on Cotton—Scouring Cloth Clean—Improvements in Cotton Bleaching—Practical Dyeing—Chlorination of Woolen Goods—Dye Recipes.
NEW MACHINERY AND PROCESSES. 130
PERSONALS 139
MILL NEWS 142
NEW PUBLICATIONS 156
BUSINESS LITERATURE 156
INDUSTRIAL NOTES. 156
RECENT TEXTILE PATENTS 157
APPLICATIONS FOR REGISTERED TRADE MARKS 160
WOOL MARKET 187
BRADFORD MARKET 189
COTTON MARKET 191
YARN MARKET 193
RAG AND SHODDY MARKET. 200
SILK MARKET. 203
DYESTUFFS AND CHEMICALS 207
MILL STOCKS 211

Correspondence

We solicit correspondence on textile subjects. Articles accepted will be paid for. Name and address must always be given, not necessarily for publication. Subscribers are invited to make free use of our Questions and Answers Department; correspondence is strictly confidential.

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A GREAT IMPROVEMENT IN CARDING.

This device consists of a Roller covered with Special Clothing placed underneath the Lickerin, and revolving slowly in the same surface direction as the Lickerin.

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This Device has no high speed parts to cause wear, and is so simple that derangement is impossible, consequently requires very little attention.

The object of this appliance is to remove motes, leaf, short fibre and foreign substances from the cotton, before it reaches the Cylinders and Flats.

This naturally increases the life of the Card Clothing, as it is not being subjected to as rough usage as would be the case if the substances removed by the Duplex Device were allowed to pass on to the Cylinders and Flats, besides which, the Clothing is at all times in much better condition to give superior Carding, and requires much less Grinding.

The quality of the Carding is very much improved by the removal of the objectionable substances referred to, and will produce a much better quality of yarn.

By this Device, without altering the Card Settings, the amount of waste taken out may be varied considerably, according to the class of cotton and quality of work desired.

Production is increased considerably, owing to the cleaner condition of the Cylinder and Flats.

DUPLEX CARDING DEVICE
HARDMAN'S PATENT

The Cylinder, Doffer and Flat Strips can be put into the regular mixing, as they contain less short fibre and foreign matter.

Flat, Cylinder and Doffer Strips can be carded without the need of frequent stripping, and a remarkably good quality of work obtained from same.

A very good Combed quality can be obtained from Flat Strips by taking out 15 to 20 per cent. at the Comber, and after making allowance for the loss in Carding, a net amount of Combed work of 60 to 65 per cent. is obtained.

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TEXTILE WORLD RECORD

NOVEMBER, 1911

Monthly Comment.

Imports of Wool and Wool Goods

The imports of wool for the eight months ending August, 1911, amounted to 116,597,223 pounds, valued at $19,508,660, showing a marked decrease as compared with the corresponding periods of the two previous years. In 1910, the amount was 151,120,417 pounds, valued at $31,258,111; and in 1909, 229,839,426 pounds, valued at $41,074,043. The following table gives the figures for each class of wool for the eight months ending August in each year:

		1909	1910	1911
Class 1	Lbs.	127,029,876	81,512,632	38,082,299
	Value	$27,198,093	$20,294,596	$8,524,225
Class 2	Lbs.	19,719,189	13,085,200	7,971,420
	Value	$4,432,174	$3,379,853	$2,082,825
Class 3	Lbs.	83,090,361	56,522,585	70,543,504
	Value	$9,443,776	$7,583,662	$8,901,610
Total	Lbs.	229,839,426	151,120,417	116,597,223
	Value	$41,074,043	$31,258,111	$19,508,660

Carpet wool imports for 1911 show an increase of 25 per cent., as compared with 1910, but this is more than offset by the decreases in classes 1 and 2 wools. This shrinkage in the foreign wool trade is due chiefly to the agitation for a revision of the woolen tariff. It is not likely that there will be any marked revival of the wool import trade while the present uncertainty as to tariff revision continues. An importer naturally is not disposed to import wool and pay a duty of 11 cents a pound when there is a probability that the tariff will be changed.

Textile Exhibitors' Association

The annual meeting of the Textile Exhibitors' Association was held October 20th at their office at 5 Park Sq., Boston. President F. H. Bishop presided and the reports of the Executive Committee and the Secretary and Treasurer were presented, the latter showing a very comfortable balance on hand.

The plans for the exhibition to be held in April are well in hand, and the applications for space are far in excess of previous allotments at this date. The fact that the large proportion of the allotments already received come from exhibitors at former exhibitions, shows most conclusively that these exhibitors appreciate the benefit that these exhibitions have been to them. Many of the old exhibitors have applied for their former space and some have requested larger space. It was announced at the meeting that one large combination of cotton machine builders would doubtless arrange to show a complete line of machinery from the openers and pickers through to the spinning, in consecutive order. From present indications, it would appear that floor space will be quickly apportioned, and those who have delayed

making their application with any doubt of the success of the show, may be assured that it promises to exceed in interest any previous exhibit.

The old Board of Officers which has so well proven its efficiency, was unanimously reelected, as follows: President, F. H. Bishop, of Boston; vice-president, H. W. Butterworth, of Philadelphia; secretary and treasurer, Chester I. Campbell, 5 Park Sq., Boston; executive committee, the above and M. H. Merrill, E. F. Hathaway, F. B. Comins and L. E. Tracy.

—:—

The Invisible Supply of Cotton

The semi-annual report of cotton at the mills on Aug. 31, 1911, was issued last month by the International Cotton Federation. The following table gives the totals for this and previous years, along with a weekly rate of consumption for the preceding years and estimated time the stock will last at that rate:

STOCKS AT FOREIGN MILLS.

Date.	Total Spindle.	Bales on hand.	Bales used per week.	Stocks will last
Aug. 31, '05	46,726,929	935,237	103,269	9 weeks
Mar. 1, '06	54,297,537	1,237,180		
Aug. 31, '06	66,072,303	1,210,610	145,603	8.3 weeks
Mar. 1, '07	71,054,503	1,911.071		
Aug. 31, '07	74,279,078	2,368,410	190,811	12.4 weeks
Mar. 1, '08	78,984,106	2,342,127		
Aug. 31, '08	83,371,883	2,132,045	215,472	9.9 weeks
Mar. 1, '09	85,906,697	2,425,127		
Aug. 31, '09	88,188,004	2,275,392	222,740	10.2 weeks
Mar. 1, '10	91,154,411	2,492,688		
Aug. 31, '10	91,124,025	2,005,786	236,990	8.4 weeks
Mar. 1, '11	93,726,091	2,641,688		
Aug. 31. '11	92,405,197	2,096,052	252,365	8.3 weeks

STOCKS AT AMERICAN MILLS.

Date	Total Spindle.	Bales on hand.	Bales used per week.	Stocks will last
Aug. 31, '05	23,687,495	776,801	82,288	9.4 weeks
Aug. 31' '06	25,250,096	688,312	94,413	7.3 weeks
Aug. 31, '07	26,242,000	996,000	95,904	10.4 weeks
Mar. 1, '08 est.	27,000,000	1,089,119		
Aug. 31, '08	27,846,000	596,000	87,981	6.4 weeks
Mar. 1, '09	27,846,000	1,831,800		
Aug. 31, '09	27,783,000	908,000	97,788	9.3 weeks
Mar. 1, '10	28,000,000	1,674,000		
Aug. 31, '10	28,349,000	518,000	90,519	5.7 weeks
Mar. 1, '11	28,500,000	1,525,000		
Aug. 31, '11	28,872,000	523,000	90,308	5.8 weeks

The report for Aug. 31, 1911, includes returns from 121,277,197 spindles out of a total of 137,278,752 spindles in all countries.

French Army Woolens

In another part of this issue there is a letter from our French correspondent giving the details of construction of eight different fabrics used for uniforms in the French army. Samples of these goods as they come from the loom and when finished accompanied our correspondent's report and can be seen at our Boston office. They should be of special interest to carded woolen manufacturers who are interested in government contracts for army goods.

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A Danish Cotton Mill Trust

The Danish cotton industry with its 79,655 spindles and 3,990 looms has not claimed a large share of public attention in the past, but as if to make up for its shortcomings in this respect, it came forward last month with a well-developed plan for a Danish cotton mill trust. The scheme was discussed at a meeting of Danish spinners and weavers at Copenhagen on Oct. 11, when it was announced that the banking firm of J. M. Little & Co. of that city had offered to provide the necessary financial backing for the enterprise. The sentiment at the meeting was wholly in favor of the combine, and H. Dessau, of Morgensen and Dessau, and the bankers, J. M. Little & Co., were authorized to obtain the formal approval of all the cotton mills in Denmark. These consist of thirty-three spinning mills and four weaving establishments. It is essential that the Danish spinners be included in the combine as several of the weaving firms operate spinning plants. The specializing of the industry, simplifying of the management and other economies resulting from the formation of the trust will, according to Herr Dessan's estimates, effect an annual saving of $280,000.

This plan to combine the Danish cotton mills under one management is the result of the unsatisfactory business since 1909. This is indicated by the imports of raw cotton into Denmark, which amounted in 1910 to only 20,504 bales, as compared with 25,260 bales in 1909, 21,868 bales in 1908, and 25,520 bales in 1907. Of 2,663 looms (being about two-

thirds of the total in the country), only 2,118 were in operation, and the latter were running to only 79 1/2 per cent. of their capacity, the rate for 1909 being 88 per cent., and for 1908, 72 per cent. The total cost of the products of sixteen weaving mills amounted in 1910 to $2,133,600, as compared with a cost of $2,109,800 in 1909, whereas the sales showed a decrease in value.

American Cotton Manufacturers' Association

Washington has been selected as the place for the next annual convention of the American Cotton Manufacturers' Association at a recent meeting of the Board of Governors. The exact date will be determined later, but the meeting will be held some time during the month of April, presumably at a time which will not conflict with the meeting of the National Association in Boston.

The World's Wool Clip

An instructive estimate of the wool grown in different countries and the distribution of about two-thirds of the world's sheep was given by the Australian Minister of Agriculture in a recent speech at Sydney, from which we take the following:

The sheep flocks of the world, according to the latest figures, are 500 millions, and two-thirds of these are depastured in six countries, with Australia at the head:

Country.	Number.	Percentage of World's Flocks.
Australia	91,676,000	18.4
Argentine	67,212,000	13.5
Russian Empire	58,378,000	11.7
United States	56,084,000	11.2
United Kingdom ..	31,332,000	6.2
New Zealand	23,793,000	4.7
	328,475,000	65.7

The smaller flocks of the other countries constitute the remaining 34.3 per cent. Of the Australian total, one-half are depastured in New South Wales. Australian sheep not only ranks first in numbers, but first in quality. Australia produces one-fourth of the raw material used in the mills of the world. The figures are:

Country.	Pound.	Proportion.
Australia	718,037,000	24.5
Argentine	386,995,000	13.2
Russian Empire ..	380,000,000	12.9
United States	328,731,000	11.2
New Zealand	223,919,000	7.6
United Kingdom..	133,088,000	4.5
All others	767,119,000	26.1
Total	2,937,889,000	100

Considerably more than half of the wool grown in Australia is the product of New South Wales. The preeminence of the sheep of Australia is due to the introduction of the best blood at great expense by the large sheepbreeders. The remarkable feature is that Australia has 18 per cent. of the sheep of the world, but 24 per cent. of the world's wool clip. An industry like that should be carefully nursed by the Government of the State, considering the great benefits derived by the State from the industry. No matter how important the secondary industries are, the primary producers came first. No nation ever became great without secondary industries. But the secondary industries were dependent upon the primary producer for the raw material.

The International Cotton Federation

The international committee of the abovenamed federation met at Berlin last month, the business meetings being occupied principally with matters relating to the growing of cotton in the various colonies of European countries. This colonial cotton enterprise is just now exhibiting in marked degree the weakness of an industry supported by subsidies and not by its ability to meet competition. The lower the market price of cotton the greater is the need of the subsidy, and the less inclined are the users of cotton to contribute. When cotton is selling for 15 cents the danger of a cotton famine comes home to the European spinners and makes the colonial scheme appear as a means of securing industrial safety. When, as at present, cotton is selling for 9 1/2 or 10 cents a pound, the European spinners are lulled into a feeling of security and are disposed to laugh at the idea of a cotton famine and the need of averting it by paying money into the treasuries of the various colonial cotton growing associations. That this situation is clearly realized by the committee of the International Cotton Federation is shown by the following resolution which was unanimously adoped at the Berlin meeting:

Resolved, That this meeting urges upon all users of cotton the necessity for the continuance of support for all endeavors to promote and extend the growth of cotton in the colonies of the various countries affiliated to the International Federation, and, while recognizing that a period of high prices provides a natural incentive to increase the growth of cotton, is of opinion that a period of lower prices constitutes a danger of these efforts being relaxed, and believes that such times reveal the necessity of Government action being more energetically prosecuted.

The committee were received by a number of high officials of the German government. The Emperor, who was some distance from the city, wired his regrets at not being able to meet the committee and stated that he took pleasure in conferring the Order of the Red Eagle on Sir Charles Macara in appreciation of the work of the International Federation. The German colonial secretary in his address to the committee stated that the production of German colonial cotton was still on a very modest scale, but the supporters of the enterprise hoped for better things.

An invitation from the American cotton associations to send representatives of the international committee to the United States next month to confer with the American associations, was considered and action postponed. A sub-committee made a favorable report on the plan to publish an illustrated technical dictionary in six languages. Another sub-committee reported in favor of a new cotton contract providing for the purchase of cotton by conditioned weight, and to this the full committee gave its approval. The committee decided to have Secretary Arno Schmidt visit India and make further inquiries as to the best method of establishing buying agencies in cotton-growing districts. It was stated that the Bombay Millowners' Association had agreed to pay a fixed premium for all long staple cotton grown in India. The committee decided to send a small delegation to India this fall to arrange for a visit by a larger delegation next year. The plan is to follow the example of the party that visited the United States in 1907 and attended the cotton conference at Atlanta.

Meeting of the Southern Textile Association

This Association will hold its meeting at Atlanta, Ga., Saturday, December 2. A large attendance is expected and an attractive program has been arranged. The railroads of North and South Carolina, Georgia and Alabama, with the exception of the Atlanta and West Point Railway, will give reduced rates for those in attendance.

Cotton Waste by Net Weight

Cotton waste dealers and consumers will be interested in the conviction and fining of a Massachusetts cotton mill last month for selling cotton waste by gross weight. The company sold a bale of waste to a Salem man, invoicing the waste as weighing 114 pounds. After the bale had been received at Salem the local inspector of weights and measures called at the buyer's place and noticing the waste decided to verify the weight. He found that the bale weighed 114 pounds, but that it was wrapped with a number of iron bands. When these were removed the waste was found to weigh 106 3/4 pounds. The inspector brought a charge of violating the law against the mill, and in court the treasurer testified that it was customary to sell waste by gross weight. The city solicitor replied to this that custom could not justify breaking the law. The judge agreed with the solicitor and fined the mill ten dollars. The decision is of importance, particularly to Massachusetts mills, and if sustained by the higher courts will necessitate bringing the cotton waste trade to a net weight basis.

THE NATIONAL ASSOCIATION OF WOOLEN AND WORSTED OVERSEERS

The 29th annual meeting of the National Association of Woolen and Worsted Overseers will be held at the American House, Hanover Street, Boston, on Saturday, Nov. 18th. The meeting will be called at 10.30 a. m. sharp. Business, election of officers for the ensuing year, reports of the secretary and treasurer, and of the secretary and treasurer of the beneficiary department. The following amendment will come before the association for action:

Resolved, That the meetings of this association shall be called promptly at 11 a. m. and continue until the routine business under regular order of business shall be concluded, when an open discussion covering the technical work in the carding, weaving, dyeing and finishing departments in the order named shall be called for by the president

and continue until each department has been heard before adjournment for dinner, which will conclude the meeting, annually and semi-annually.

The committee have made arrangements with the American House for dinner, price to be $1.25 per plate. Each member returning the postcard and attending the meeting will be charged 75 cents, the balance to be paid by the association. The Badge Committee also desire a full attendance as they are endeavoring to have all past presidents present, and hope to make the 29th anniversary a red letter day and one long to be remembered by the textile world at large.

Secretary Walter Pickford in his notice of the meeting urges those who intend to be present to notify the committee promptly by return postcard which is sent for that purpose. In previous years much embarrassment has at times been caused by failure to notify the secretary, the result being a larger attendance than was expected and consequently inability to entertain them as the officers desired.

THE MANCHESTER MACHINERY EXHIBITION

By Our Special Correspondent

Manchester, Eng.

No Textile Exhibitors' Association exists in England and when certain Londoners were promoting a textile machinery exhibition in the outskirts of Manchester last year, machine builders did not know how to make up their minds. A meeting of the trade was convened by the editor of the English weekly textile journal, and associated with him upon the platform were the editors of the other two textile periodicals. The meeting decided for various reasons to have nothing to do with the project, and the opinion was freely expressed that to ensure a full display a machinery exhibition should be brought forth under civic auspices and for public purposes rather than for private profit. Those conditions the largest machine makers demand before consenting to the heavy expense that an adequate show entails upon them.

The Machinery & Accessories Exhibition, held in Manchester October 10 to 28, was a private venture carried on with the help of the "Textile Recorder," which journal along with its fellows had brought about the destruction of the similar scheme of the year before. The promoters were the same, but the site and date were changed. In view of the facts and the great activity in the exhibition world during 1911, it is perhaps remarkable that the exhibition in the City Hall, Manchester, turned out so well. Turin, Roubaix and Glasgow have all been competing for the patronage of textile machine makers. About eighty exhibitors took part and the apparatus and device on the stands were rather the adjuncts than the main machinery of the mill.

America was in a double sense well represented at this affair. As an Englishman remarked at the exhibition: "American firms don't send their worst salesmen over here; they send somebody who can talk about the goods."

The International Winding Co., of Boston, U. S. A., occupy a large stand where they show a variety of the Universal winding machines which have become so world wide in use and application to the textile industry. The machines shown are a No. 50 machine fitted for winding cones and parallel tubes, another machine especially adapted to wind very fine yarns for electric insulating purposes, and also one of their No. 90 quilling machines equipped for winding filling for loom shuttles. This machine especially attracts much attention and is meeting with a very wide sale in weaving mills. As the machines shown are all of American design and manufacture, they naturally attract more attention than would otherwise be accorded them.

The Buffalo Engineering Co., of London, builders of the Carrier system of air conditioning, exhibit a good-sized model plant in full operation, which attracted much attention. The close automatic control of humidity and temperature was shown by the apparatus and the records.

The Ingersoll Rand Company, agents for the Turbo humidifiers and Turbo vacuum

cleaner, kept a ring head of humidifiers under full blast and the use of the Turbo cleaners was energetically demonstrated. Detachable tubes adapted to floor, machine or overhead cleaning enable all parts of the room and machinery to be reached.

Mr. F. W. Parks of G. M. Parks Co., the American owners of the Turbo apparatus was frequently in attendance at this exhibit.

Barber & Colman showed the familiar knotters and the warp tying machines, of which some sixty are in use in the Manchester area. The success of Barber & Colman in England has had cheering effects on newer comers from the same country.

A dummy drying range was fitted up to show the application of the bristle cloth-stretcher made by the American Finishing Machinery Co. These are selling well and are said to be in very extended use in the English market.

The demonstration of improved machines and the free development of the English knit goods business divide between them credit for the new interest taken in winding machinery. Americans gained an obvious lead in this department which Thomas Holt, Ltd., Rochdale, for one has recognized. Cone and parallel winders were exhibited by him and also the upright winding machine fitted with an attachment for making bottle-shaped bobbins. Arundel & Co., Stockport, showed a winder in which two wires with a clipped-on pot guide replace the more familiar traverse rod and glass thread guide. A differential gear is used in driving the drums and traverse and the change of a wheel regulates the angle of the crossing. On the Joseph Stubbs, Ltd., stand was a winder of which the thread-guide and traverse motion was actuated by a radially slotted wheel and a segment rack.

John Hetherington & Sons, Ltd., exhibited a new cross-winding machine for cheeses. (Taylor's Patent.) The yarn is crossed four time to each revolution by what has the appearance of one iron finger wagging to and fro. Actually there are two fingers, mounted on separate axes and pivoted at their centers. These are balanced

(*From the Textile Recorder.*)

VIEW OF THE TEXTILE MACHINERY EXHIBITION, MANCHESTER, ENGLAND

and driven round continuously in oppossing directions. One finger carries the yarn to the right, the other to the left, and the opposite ends of these fingers in completing their revolution repeat the process. The primary object of the arrangement is to obtain high speed. Another novelty on the same stand affords a means of holding conical tubes. A spindle with a cap to fill the small end of the tube, fitted with a winged screw, a rapid thread and a dished steel shield to fill the bottom, are the features of this patented device. The shield is in the shape of a Maltese cross with three small steel points on each division. The effect of sending home the screw is to press the petals outwards and dig the pins lightly into the tube.

Samuel Pegg & Son, Ltd., Leicester, showed a set of the very heavy wooden washing, fulling and dyeing machines used in this country for knit goods. Wm. Dickinson & Sons, Blackburn; W. A. Mather, Manchester; G. Hattersley & Sons, Ltd., Keighley, and the Universal Shuttle Changer, Ltd., Manchester, exhibited shuttle-changing devices. Thos. Larmuth & Co., Ltd., Manchester, showed braiding machines. Water softeners, fire extinguishers, valves, an electrical packing press, aerographs, cans, beams, mill gearing, flooring compositions, chains, heddles, oils, driving ropes, garnett rollers, lubricating collars, card strippers and dobbies were sent by various manufacturers and presented their own degrees of interest. Four inventors were in attendance to sell devices intended to do away with shuttle-kissing. That of Harry Matthews, of Rochdale, was simplest. The article is to all appearance a rubber syringe suitable for nasal use. Bulb and nipple are all of one piece and the weaver can pick up an end by using the ball as a sucker and thread the shuttle by using it as a blower. The Murphy-Simpson shuttle threader (Hapton, Burnley) is a loom-fixture. The shuttle is pressed against a rubber pad mounted upon a piston rod. The piston retires into a cylinder, leaving a partial vacuum in front of it sufficient to suck the filling through the shuttle's eye. A patent shuttle for use with the threader is devised to defeat the weaver who tries to use her mouth. The shuttle has two eyes and while the automatic threader brings the yarn through the right eye, lip-suction brings it through the wrong one. George Ashton's threader (Morecambe) is a hand bellows with a rubber mouth, cheap but light in construction. Ormerod & Thornton's shuttle (Bury) cannot be threaded by suction. The filling is passed by hand down a cut in the side of the shuttle and round a stud and so into the eyelet.

The well-known Moscrop machine for testing single yarn and automatically recording the breaking points was exhibited by Cook & Co., Manchester. R. Briercliffe, Farnworth, showed a less-known upright machine for recording the strength and elongation of rovings and single threads. A pick counter for looms by Cook & Co., and tachometers and dynamometers and balances by George Thomas & Co. are worth mention. Tomlinsons (Rochdale) Ltd., and Franz Muller, M. Gladbach, showed cloth-raising machines, and Newman & Sons, Manchester, exhibited models of machines for dyeing and treating cotton waste. Of yarns and fabrics the only exhibit was that of the Silvalin Yarn Spinning Co., Manchester, a concern that has manifestly been at great expense to illustrate the manifold purposes to which paper thread can be put. The back of the stand was decorated with a paper burlap made originally for wool bagging, but printed in the manner of wall paper. The front was hung with woven paper cloth printed in cretonne styles. There was imitation worsted made with a paper filling and worsted warp face, and tweed made pick and pick and end and end of paper and carded woolen. A small sample of tweed from bulk made in Dewsbury is forwarded and it can be said that the cloth looks wonderfully well after some weeks' wear. In addition, there were paper mattings, twines and ropes, deck and gymnastic shoes with paper uppers, paper tent cloth and deck chair sheets, overalls, paper tickings and tennis flannels, paper golf bags and Turkish towels, hat stiffeners, cotton and paper shirtings and hat bands, tapestries and furniture webs. When the collection is complete every kind of fabric in

which yarn of 4 1/4s, cotton counts, can be used at all, is to be represented. Possibly some of the productions are more of technical than commercial value, but they may justly be called surprising. One did not notice any knit goods made of paper yarn, although knitted golf jackets for ladies' wear have certainly been produced in Germany.

THE TEXTILE PUBLICITY LEAGUE

Over one hundred of the textile manufacturers of Rhode Island met at the Talma Theatre, Providence, last month and organized the Textile Publicity League, whose object is to conduct a campaign of popular education regarding the tariff on textiles. The meeting was held in response to a call signed by

John O. Ames, L. W. Ballou, Harrison Benn, E. C. Bucklin, Joseph E. Fletcher, R. I. Gammell, William Grosvenor, J. H. Hambly, F. L. Jenckes, A. L. Kelley, J. R. MacColl, C. H. Merriman, Jr., G. R. Parsons, F. H. Peckham, F. A. Sayles, Charles Sisson, H. O. Sturges, R. W. Taft and H. C. Whitman.

The meeting, which was open to the public, was called to order by G. R. Parsons, secretary of the Crompton Co. Dr. F. H. Peckham, president of the Hope Webbing Co., was elected chairman, and John O. Ames, agent of the Fletcher Mfg. Co., was made secretary. Dr. Peckham, the chairman, called attention to the serious results of the tariff agitation and said in part:

You are called together today in conference to decide as to the best course of giving publicity to the effect the proposed tariff changes will have on our industries.

There should be no politics in this, as all Republicans and Democrats are equally interested. We desire to do what is best for all our people.

I would say that under the Republican administration our industries and the whole country have prospered until we now rank among the most prosperous and richest countries in the world.

According to statistics, our industrial operators receive on the average about double the wages for the same service as is paid those of Europe, while the cost of food is practically the same.

Our working classes are better clothed, housed and fed than those of Europe and the increasing deposits in the savings banks show that they are earning more than a living.

Taking the textile industries by and large the profits have not been excessive or unreasonable, but if tariff legislation is so changed that we must compete with the pauper labor of Europe, we can only so do and maintain a liberal profit by reducing the cost of manufacturing.

I believe the textile manufacturers of Europe receive, on an average, about the same rate of profits as those of this country, therefore, the first to feel the baneful influence of a reduction in tariff rates will be the laboring class.

I am informed that the underlying principle on which the proposed tariff is based is the difference in the cost of labor in this country and abroad, and the working classes will be the first affected by any change. I do not think sufficient publicity has been given this fact, which its importance demands.

We should place plainly before them and the public a statement of the effect which the proposed sweeping reductions would have on their interests in order that they may act intelligently in the coming election.

The chairman then called upon Senator Henry F. Lippitt, who spoke as follows:

The textile interests of this country, and especially of New England, find themselves confronted by an extraordinary situation, for which an extraordinary remedy is needed, and this meeting has been called for the purpose of showing to the people of the country that the textile industry is jeopardized by the proposed tariff changes and to begin a campaign of education whereby the working people will be enlightened from the misstatements that have been made concerning the tariff, the industries and the wage-earners.

A sudden attack has been made upon our industry of such a character that we fear the result from the changes that have been proposed. The proposed tariff provides that woolen goods, which for more than 50 years have enjoyed a protection of not less than 50 per cent., are to be reduced to a rate of 20 per cent.

Under such a rate no woolen manufacturer in this country can hope to successfully compete with the foreign manufacturers. It is a fact well recognized by all students of the textile industry that the cost of labor is the largest proportion of the entire cost of manufacturing. What, then, is going to be the result? Either the textile mills of New England must shut down or the wage-earners must suffer a cut-down.

The proposed tariff changes regarding cotton goods are even more sweeping than in the case of woolens. In the 50 years cottons have been protected by an average ad valorem duty of not less than 40 per cent., but the new tariff proposed to substitute a rate of 15 per cent. applicable to about 80 per cent. of the cotton products, 20 per cent. on about 5 per cent. and 25 per cent. on the other 15 per cent. of the productions.

The proposed reductions in rates on yarns is even lower than that on cotton. Does it need any arguments to show what the results of such reductions must inevitably be?

When it was first proposed to call this meeting it was suggested that it should be held privately. The idea of holding a public meeting was questioned. But let us face the issue squarely. You cannot carry on a campaign of publicity by beginning with meetings behind closed doors. We

must come out in the open and must present our facts so clearly that there will be no misunderstanding.

It is more than 15 years since the great tariff issues were intelligently discussed by men who by lifelong study were masters of the whole intricate subject. Such men as Blaine and Reed and McKinley, always ready to meet any tariff emergencies, are gone with none to take their places. Since then a whole generation has come to the front. Many immigrants have come into the country and none of these have been educated or instructed as to the vital interests which the protection of the tariff has for them as individuals.

The time has come, therefore, when it seems wise that some decided steps shall be taken to educate these men as far as it is possible as to the results.

We do not object to an intelligent revision of the tariff. This is not an intelligent revision. In its present situation the revisers have approached the subject suddenly and would destroy the work and study of years. If there is any doubt that this is so, it is only necessary to say that the present tariff contains something like 700 paragraphs concerning textiles, whereas the proposed revision has but nine. The revision is not equitable.

As a state we are more vitally interested than any other in the revision of the tariff pertaining to the textile industry, and much is dependent upon Rhode Island at this time, through what the voters may have to say by their votes. In a great measure the attitude of the rest of the country as to the tariff revision on textiles will be formulated by the voice of the voters of Rhode Island at the ballot box.

All that we ask for is an intelligent consideration of this great question taken after careful study and without undue haste. In order that the State may be properly placed in this matter before the country, it is necessary to show to the voters of our State just what this proposed tariff revision means to them.

There are two ways in which this may be done. One way is for every mill man here today to enlist every one of his friends, directors and others, to make an individual canvass and the other is for this meeting to appoint a committee of publicity to distribute such literature, to deliver lectures and to take such other effectual means to bring the matter directly to the attention of the operative-voters.

The next speaker was John O. Ames, agent of the Fletcher Mfg. Co., who said in part:

Since the 1909 tariff was passed the country has been flooded with misstatements and misinformation, and it is time that the people of the country were shown the truth. It seems to be a popular notion throughout the West that the mill men of New England are fabulously wealthy, and that millionaires control the textile corporations.

There never was a more erroneous idea. Statistics show that the textile corporations of New England are controlled by widows and orphans who are the principal stockholders.

It is quite time that those of such to whom this matter means bread and butter should come out and refute these misstatements. We have remained quiescent too long for our own good, and those who have been responsible for these misleading statements, and emboldened by our silence, are now seeking to carry into effect the tariff changes they have had in view so long a time.

We can only meet this campaign of misrepresentation by inaugurating a campaign of truth and educating the people that the interests of the manufacturers are coordinate with those of the operators. What we need and what we must have is a bureau of publicity and the time has come when we should have it.

Arnold Schaer, agent of the Warren Manufacturing Co., gave a detailed account of the conditions in American and foreign mills, and said:

It would seem in the present situation that the West and South have combined against New England and appear to be determined to carry out their policies irrespective of their effect upon this section of the country.

If the cotton tariff is changed along the lines suggested, it would be a great calamity. Its adoption would necessitate a cut of 50 or 60 per cent. in wages in order that the mills of New England could compete with those of England and Germany. This would practically put the industry out of business.

Because of the peculiarities of the union scale in England, wages there are only 10 per cent. higher than they were in 1860, after the great labor strike. As compared with this, labor in this country, under the favorable provisions of the tariff, has increased 40 per cent. since 1894. In addition to this, the hours of labor have been reduced from 60 to 56 hours, which makes another 6 per cent. in favor of the operatives. And yet, notwithstanding this great advance in the percentage of wage earnings, the cotton operatives of today are the poorest paid proportionately of any in the State. Again, the opening up of other lines of more congenial work has called away the more intelligent and better class of our operatives, so that the help of the present day is inferior as a rule to that of a few years ago.

Joseph Ozanne, of the Regina Silk Co., Central Falls, who moved his lace works from France to the United States in 1910, securing the entry of his lace making machines free of duty under the limited provision in the Payne tariff act, spoke as follows:

If the proposed tariff is passed it will simply mean that we will be forced to move our mills back to France again. Lace to the value of more than $50,000,000 are sent out of France every year and of this amount 2/3 or 3/4 are imported into the United States.

The reason for this is to be seen in the fact that the agricultural and mercantile classes here make

such large wages that their demands for lace embroideries is far greater than that of the European countries, where only the wealthiest classes can afford such luxuries.

Taking advantage of the implied invitation of 1910, under which we were able to bring in our expensive improved lace making machinery free, my company located in this State, and with the 70 per cent. protection of the present tariff have been enabled to compete with the product from France and to build up a new industry in America.

Labor is the greatest factor in the cost of the products of our mills, and the 70 per cent. protection merely places the cost of the imported article on an equal footing with the American product, the labor item in this country being fully 200 per cent. higher than it is in France.

Lace making is a new industry for America, and although only but a year old, there is from $3,000,000 to $4,000,000 invested in this State, out of about $10,000,000 in the whole country. There are 5,000 operatives at the end of the first year and we are educating hundreds of others. The effect of a reduction in the lace schedule is of more importance to Rhode Island than elsewhere. We hope to remain here and expect to build up a large industry; this will be impossible if the change in tariff is passed.

Senator Lippitt asked Mr. Ozanne if it were true that the lace manufacturers of Calais were raising money with which to help fight for tariff reduction in the United States. In reply Mr. Ozanne stated that money was being raised by subscription in Calais, but he did not know that it was being sent to this country.

G. R. Parsons, secretary of the Crompton Co., manufacturers of corduroys and velveteens, spoke as follows:

Some years ago, induced by a protective tariff, the Crompton Co., then manufacturing print cloths, began the manufacture of velveteens, and later, corduroys. Properly to weave and cut the pile to make these cloths presented extraordinary difficulties.

Operatives skilled in the various processes had to be developed and educated to follow crafts unknown in the United States. Later, finding it impossible to have dyeing and finishing done by others of a quality equal to that of the great English, French and German dye houses, we were obliged to master these arts, and to build up a plant of our own capable of turning out work second to none.

To accomplish all this has taken patience, perseverance and the expenditure of a great deal of money.

Where formerly was a small group of cotton mills, employing less than 400 hands, making print cloths, there today stands a plant employing nearly 1,000 hands in which cotton is received from the bale and eventaully shipped away in a hundred different styles of richly dyed corduroys and velveteens.

All this, gentlemen, has been made possible under a protective tariff. The struggle to bring this about has been most severe. For several years we did business at a loss, and it was a long time before we could produce perfect goods and at the same time convince the buyers of the United States that they were perfect and unsurpassed by anything imported.

Having at last reached our goal, a goal which we would never have sought or been able to attain without the protection of the tariff, we are confronted by what?—not merely a modification, carefully studied and planned, but by a reduction so drastic, and so far reaching as almost to suggest free trade.

It is not tariff reduction with which we are confronted, but tariff destruction.

If the cotton schedule of our tariff laws is to be like that vetoed by President Taft, with the expected resultant fall in prices, our looms must inevitably cease producing the cloth which years of study and labor have at last made perfect, and the character of our business must be enormously changed.

After the speaking it was decided to form a permanent organization under the name of the Textile Publicity League, and the following officers were elected:

President, Dr. Fenner H. Peckham; vice-presidents, Col. Joseph E. Fletcher, Lyman B. Goff of Pawtucket, Charles Simon and William Clark; executive committee, John O. Ames, Harrison Benn of Joseph Benn & Sons', Harris H. Bucklin, assistant treasurer of Interlaken Mills; John W. Coggeshall, agent of Riverside Worsted Mills; Frederick L. Jenckes, of the Jenckes Spinning Co.; Arthur L. Kelley, president of the Mechanical Fabric Co.; Webster Knight, of H. B. & R. Knight; James R. MacColl, treasurer of the Lorraine Manufacturing Co.; Charles H. Merriman, Jr., of the Manville Co.; G. Richmond Parsons, Frank E. Richmond, 2d, treasurer of Crompton Co.; Howard G. Sturges, Robert W. Taft and Harold C. Whittman, treasurer of the Esmond Mills.

Col. Joseph E. Fletcher, of the Coronet Worsted Co., then introduced the following resolutions, which were unanimously adopted:

Whereas, The tariff legislation of the last Congress reducing the protection on woolen goods from approximately 50 per cent. to 20 per cent., and reducing the protection on cotton yarns and fabrics from an average of 42 per cent. to an average of less than 20 per cent., is an unprecedented attack on the textile industries of this State, which will, inevitably, bring disaster to owners and employes alike; and

Whereas, It is well understood that the purpose of those responsible for this legislation is to make similar drastic changes in the duties applying to other classes of manufactures; and

Whereas, We believe that the tremendous consequences of such an entire revolution in the eco-

nomic policy of this country are not at present realized by the citizens of Rhode Island; and

Whereas, While we are not opposed to such reasonable revision of present duties as the investigations now under way shall prove to be possible without disaster to the large number of people engaged in the industries thereby affected, we are opposed to tariff revolution;

Therefore, be it resolved that we take every legitimate means to bring this unparalleled situation to the attention of the voters of this State for their consideration in the approaching election.

The meeting then adjourned.

FELTED WOOL UNDER THE MICROSCOPE

By LEO PINAGEL, Director of the Conditioning House at Aachen.

(Translated from the German by the Editor of the TEXTILE World Record.)

As is well known, the structure of the wool fiber is such that it resembles cups placed one inside the other, the edges projecting from the outside of fiber, and forming a series of scales. The number of scales varies with the quality of the wool and upon the number of them depend the curl and felting quality of the fiber. The wool as it grows on the sheep's back has the scales pointing in the same direction, from the root to the outer end of the fiber. The subsequent handling of the wool tends to disturb this uniform arrangement of the fibers, causing some of the scales to point in one direction and some in another in the spun yarn. This causes the scales of different fibers to hook into each other and enables the wool to be felted. Felted wool materials may be divided into two classes: First, those consisting of a felted mass of wool, such as is used for shoes, piano hammers and upholstery; second, woven felts, such as kerseys, beavers and meltons. As already stated the felting quality of the wool depends upon the number of scales in a given length of the fiber. This enables us to illustrate the variable felting properties of different wool materials. In order to make these illustrations I have had felts made of different wools: 1, Very fine Hungarian wool; 2, fine Australian wool; 3, crossbred wool; 4, English wool. These wools were carded by hand and then after adding the necessary quantity of oil and water were fulled by hand in soap and water. Photographs of the felts as seen under the microscope were then taken, the enlargements being the same in each case. Fine Hungarian wool, Fig. 1, shows a very fine curly fiber which has been closely interlaced by the fulling process. The felt is very compact. The felt from the Australian wool, Fig. 2, has a similar appearance, the difference being due to the coarser fiber, which results in a less number of fibers being found in a given space. This difference in the number of fibers is more marked in the case of crossbred wool, Fig. 3. Here we also find less of the curl in the wool and less felting of the fibers. English wool, Fig. 4, is a hard, brittle fiber with a small number of scales and lacks the curly form of the fine wools. The individual fibers lie parallel and the felt is defective. The appearance of the felt gives the impression that each fiber is ready to separate from the mass. This is in fact

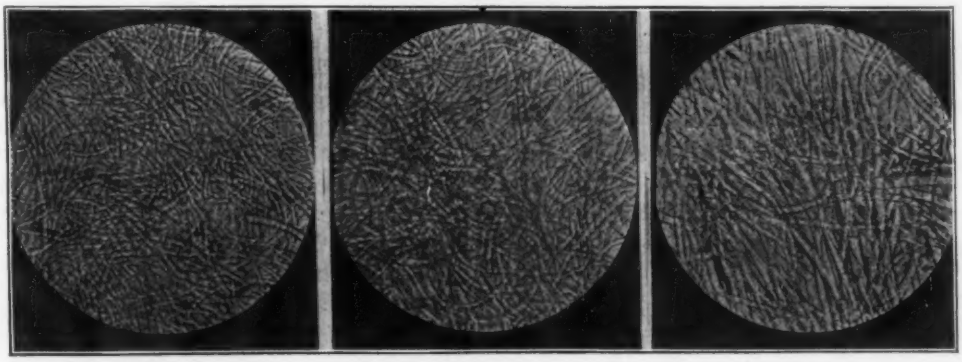

FIG. 1. FIG. 2. FIG. 3.

the case. This felt was repeatedly fulled with soap without changing the original positions of the fiber. The felt is very defective and the object of showing the sample is to enable a comparison to be made of the results with different wools.

A machine-made felt is shown at Fig. 5.

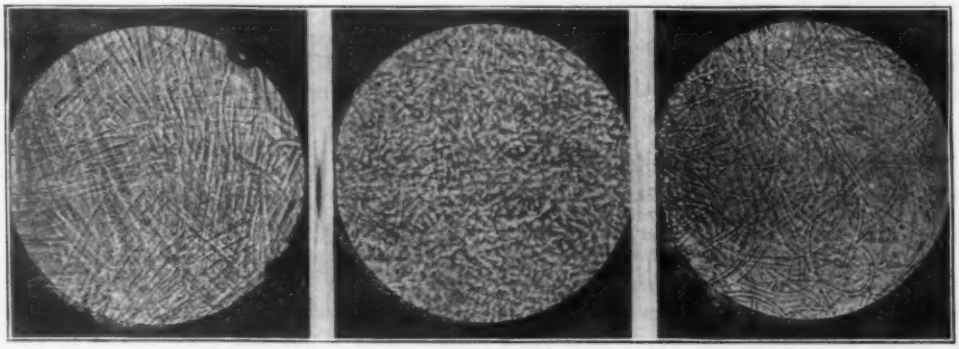

FIG. 4 FIG. 5 FIG. 6

The fibers make a compact mass and the felt is very firm. Our examination of these samples leads to the conclusion that fibers without scales cannot be felted. The same felting qualities are exhibited by the wool fiber in woven fabrics, as we have observed in the samples already examined. Fig. 6 shows a felt made of pure wool prepared by the carded woolen process. Fig. 7 is a sample of felted worsted top. In Fig. 6 we find the fibers curly and crossing each other in every direction. In Fig. 7 we find the fibers lying more nearly parallel. The same appearance is found in the yarns, Figs. 8 and 9, made from these two materials. Both being made of wool of the same quality. The carded woolen yarn, Fig. 8, is open and the fibers are curly, while the worsted yarn, Fig. 9, is a compact thread, with the fibers lying straight and parallel.

The same qualities are exhibited by wool when woven into cloth. Fig. 10 shows a cloth made of carded woolen warp and filling, woven with a plain weave. The threads lie loosely beside one another. Fig. 11 shows the same fabric after being fulled. The spaces between the threads have disappeared and both warp and filling have been felted into one compact mass. Fig. 12 is a worsted cloth woven with a 4-leaf twill. After felting it has the appearance shown at Fig. 13, the threads having been felted into a uniform mass. The cloth, however, is not as well covered as in the case of the carded woolen fabric. The cloth is more open than the carded woolen cloth, this resulting from

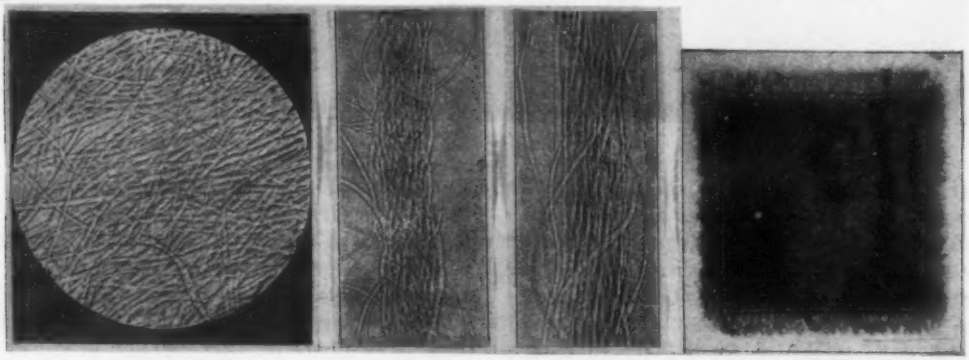

FIG. 7. FIG. 8. FIG. 9. FIG. 10.

the reducing felting quality of the worsted yarn. The worsted process of combing and drawing have a tendency to destroy the scales of the fiber and thus reducing the felting qualities of the wool. A good felt is essential for good results in gigging and finishing these goods. Fig. 14 shows a broadcloth for women's wear woven with a 3-leaf twill, worsted warp and carded woolen filling. The fabric, as seen in the illustration, is imperfectly covered, the fibers not lying close enough together. Fig. 15 shows a better covered cloth, the fibers being much closer together. Fig. 16 shows this cloth, Fig. 15, after being sheared, pressed and steam blown.

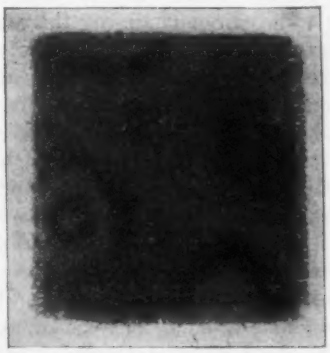

FIG 11.

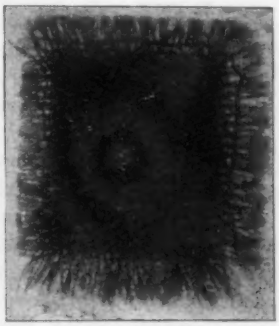

FIG. 12

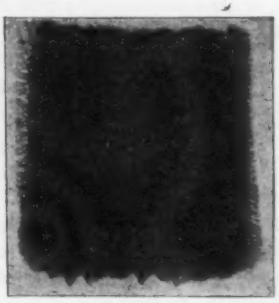

FIG. 13.

UNIFORM CLOTH FOR THE FRENCH ARMY

By Our Special French Correspondent

Amiens, France, Oct. 15, 1911.

I am sending with this report samples of eight fabrics used for uniforms in the French army. Each fabric is shown as it leaves the loom and also when finished. These goods, which are all carded woolen, are dyed in the yarn. I also enclose samples of the filling yarn used for samples Nos. 1, 2 and 5. Following are the details of construction for each cloth:

FIG. 14.

FIG. 15.

FIG. 16.

No. 1—Dark blue uniform cloth for soldiers. 2,200 ends, 98 1/2 inches wide in loom, 33 picks. Warp, 2 1/4 runs; filling, 2 1/10 runs.

No. 2—Blue and white mix for soldiers' cloaks. 2,200 ends, 104 inches wide in loom, 33 picks. Warp, 2 1/4 runs; filling, 2 1/10 runs.

No. 3—Dark blue for soldiers' tunics. 2,000 ends, 79 inches wide in loom, 31 picks. Warp, 1 5/8 runs; filling, 1 3/4 runs.

No. 4—Sky blue for subofficers' uniforms. 2,800 ends, 94 1/2 inches wide in loom, 56 picks. Warp, 3 7/8 runs; filling, 3 3/4 runs.

No. 5—Madder red for soldiers' trouserings. 2,200 ends, 98 1/2 inches wide in loom, 33 picks. Warp, 2 1/4 runs; filling, 2 1/10 runs.

No. 6—Sky blue for cavalry uniforms. 2,200 ends, 98 1/2 inches wide in loom, 33 picks. Warp, 2 1/4 runs; filling, 2 1/10 runs.

No. 7—Madder red for trouserings for subofficers. 2,800 ends, 98 1/2 inches wide in loom, 43 picks. Warp, 3 1/10 runs; filling, 3 runs.

No. 8—Dark blue for tunics for subofficers. 2,700 ends, 104 inches wide in loom, 43 picks. Warp, 3 1/10 runs; filling, 3 runs.

All of these cloths (Nos. 1 to 8 inclusive) are woven in cuts 59 yards long, and in finishing they are shrunk to about 41 yards, or 30 per cent. in length. They are 55 inches wide finished.

MILL EXPERIENCES

Under this head we will publish from time to time stories from practical mill men, telling of vexatious and unusual difficulties which have occurred in different branches of mill work, and how they have overcome them. We invite mill men to send us an account of such experiences. We pay, of course, for all that we use. Facts told just as you would tell the story to a friend are what we went, not fancy writing.

THAT FIRST OVERSEER'S POSITION

BY COLFAX

(Continued from September.)

Then I went carefully through this first breaker that I had dusted out, setting it clear through from feed rolls to comb blade and then started it up. It of course made a great improvement in the work and I felt accordingly very much encouraged. Of course while the first breaker was stopped the second breaker had been running, but had caught up for spools so that as I got the first card ready it was necessary to stop the second breaker to allow the creel to be filled again. I then took this second breaker apart and spent the next two hours on it in the same way as I did on the first breaker and a decided improvement was noticeable in the result.

Following my hand along to the finisher I took this apart and smoothed all the rolls up, giving the rings also a light smoothing with the emery board and then began the adjustment of this card and while I found on the breakers that my predecessor was fond of open setting as to workers, etc., the setting of the finisher was a surprise to me and I was a bit timid about changing the adjustment so much. However, I was satisfied that they were not right and went ahead regardless of what the reason was for the other man having them as they were. Not only did I set closer on the workers, but I ground and re-set the fancy, as I found it ridgy and to my mind tending to make light and heavy threads. I set the ring doffers very much closer to the cylinder, took out and re-set to my liking the rub rolls and then set the whole condenser up to the doffers and when finally the card was started and the roving adjusted to the regular size, there was a considerable improvement in the appearance of the work as compared with what had been coming from this card, and as the better quality of work got through from the first and second breakers, I was satisfied that I had done a good day's work, for not only did the work look nice and smooth, but there was no breaking down of roping on the finisher, which of course excited the admiration of the finisher tender; but they told me that the new roving was spinning right along without a break and the spinner following that particular card naturally expressed himself favorably as to my ability.

The next day brought a repetition of the above results of my labors on the next set, and then a new problem faced me, namely, that the spinners had always been in the habit of waiting a great deal for roping, and they had made a practice of doing their loafing in the card-room, and this got on my nerves after a couple of days so I decided to see if I could not overcome this.

As the work seemed to be so much improved with the little that I had done so far, it struck me that with this improved condition of the roving, that it might be possible to speed up the doffers a bit on the finishers, and as I got each machine into condition I added a good, thick lag to the driving pulley

of the doffers and there seemed to be no deterioration in the quality of the work, either in the card-room or spinning-room. It of course took a little time to have this small increase of speed show itself in the spinning-room, but slowly and gradually it made itself apparent and much to the surprise of the boss spinner and the operatives, they soon found themselves fully employed trying to keep clear of the card-room and they were turning off a greater production and better yarn than they had ever done before, were making less wastes and there was a general gearing up all along the line, prompted, as I was told later, by the superintendent jokingly taunting the other departments because they were permitting the new "kid" to put it over them and show them up.

So the days went by and each day saw me making some progress in completing the round of the eight sets. I was working like a little nigger myself and my anxiety to lose no time on the work I was doing naturally kept my second hand and all others under my charge keyed up to high speed until the particular machine on which we were working was again running, and I was very fortunate in having such a loyal group of help, for they all seemed anxious to do their mite in helping me.

I was never tired, although I worked hard and went to my boarding place each night thoroughly contented and anxious for tomorrow to arrive, that I might continue the work. I recall, also, that I never seemed to have any anxiety as to how the work was running in the spinning-room. I turned it out as good as I could in the card-room and felt that I had done all that I could under the circumstances, and it never occurred to me to go to the spinning-room to see how it was spinning. I heard no complaints, but on the other hand always good reports of improvement would reach me through my second hand or some spinner. I was tending strictly to my own business and was busy at it as you may judge and had no time or inclination to go roaming about or visiting other departments.

When I was there two weeks and everything seemed to be going along all right, pay-day came along and in the regular order of things there was a week's wages due me and I had been a bit curious all day as to what they would decide to pay me and it was somewhat of a surprise to me when the clerk made his round distributing the envelopes that he did not seem to have anything for me but a pleasant smile. I, of course, said nothing to anyone, but I could not quite fathom why I should not have received some sort of envelope and the more I thought it over the more irritable and disappointed I became.

To make things worse along about 5 o'clock I was sent for to come to the office and as this was the first time I had been sent for in this way I was a trifle nervous as to what was ahead of me, although I felt quite sure that things were going all right, as there had been no complaint whatever. I found both agent and superintendent waiting for me and I was requested to take a seat as they wished to talk with me. Then the agent began to review the situation from the day that he had wired for me to come up to the present, telling me that they had been all the time very doubtful of my being the man for them, that even while they agreed to let me start in, they were in communication with other men, that they were satisfied I had been given time enough to show what I could do and they had sent for me now to tell me that (here he hesitated a long time and from the very serious look on his face I thought it must be all over but the packing up) I had made good and made good with a vengeance too.

They then handed me my envelope marked $18.00 and told me that if at the end of three months I continued to do as well as I had in these two weeks that they would very gladly make the pay $3.50, and which was more than they had ever paid, but that they felt I would be worth it to them as they had found that the cost of production had decreased quite a bit in these two weeks. I was advised to make my mind easy as to remaining with them permanently, adding that whereas they had been strongly of the opinion that their carding had been quite up to date, it had been clearly shown that they

were going backwards without realizing it, and that any ideas I might have in the way of improvements that might lead to reducing costs in any way or producing higher quality work, they would like to talk them over with me at any time, assuring me that they were not only willing but anxious to support me in any effort I might make for further improvement.

After listening attentively to a lot of good, sensible advice about the danger and disagreeable results attending a young man whose head became swelled when a little success came to him, I went back to the card-room feeling very well satisfied with the world in general.

(To be continued.)

COTTON CARDS

By HENRY K. ROWELL, Member A. S. M. E.

Editor Textile World Record:

In answer to Mr. Evan Arthur Leigh's letter taking exceptions to the statement made regarding cards in my paper entitled "Organization of the Carding Department in Cotton Mills," read at the last meeting of the National Association of Cotton Manufacturers, at Manchester, Vt., and published in your October issue, the writer wishes to call attention to the fact that the paper referred to is a discussion upon the general features of the organization based upon actual practice and running conditions. No hint is made toward any special make of machine, but all machines of a class are considered collectively. As to the Platts' machinery in particular, it is admitted that it is excellent machinery. Some of the best made machinery the writer has examined was made by Platts.

PRODUCTION

It is admitted without exception, so far as the writer knows, that the sole reason for installing 45-inch cards is in order to make a greater production per card than can be made on a 40-inch card.

It will be admitted by all good carders without doubt, that a 40-inch card will produce up to a 60-grain sliver as a maximum to get the best results from carding, that a 45-inch card will produce up to a 66-grain sliver to give equal results, as this would allow the same weight of fleece per inch of carding surface over the cylinder.

That is to say, where the organization will admit using the 45-inch card, the same amount of product could be obtained from ten 45-inch cards as would be obtained from eleven 40-inch cards.

It is stated in the paper on Organization that the later processes of drawing and roving frames may be dependent upon the weight of sliver coming from the card. This can be illustrated by a table showing weights and drafts as follows:

Size of Cards.	Col. 1 45 in.	2 40 in.	3 40 in.	4 40 in.	5 45 in.
Weight of lap from pickers, ounces,	13.5	12	12	9.5	10
Draft of card,	90	87.5	110	110	110
Weight of sliver, grains,	66	60	48	38	43
Double and draft first drawing,	6	6	6	6	6
Double and draft second drawing,	6	6	6	6	6
Weight of drawer sliver, grains,	66	60	48	38	43
Draft of slubber,	4	3.6	3.8	3.6	4
Weight of slubber roving, hank roving,	0.50	0.50	0.68	0.80	0.75
Draft of intermediate,		5.2	5.5	5.5	6.0
Weight of inter-roving, hank roving.		1.3	1.88	2.25	2.25
Draft of fine roving,		6.2	7.0	7.2	7.2
Weight of fine roving, hank roving.		4.0	6.5	8.0	8.0
Draft of Jack frame,		5.0	—	—	—
Weight of jack roving,		10.0	—	—	—
Draft of spinning frame,		10	10	10	10
Number of Yarn,		50	32	40	40

Columns one and two show where either a 40-inch or a 45-inch card may be used. Columns four and five show an organization for fine roving with long drafts on the roving frames. Columns four and five also show the lightest weight sliver that can be made on the 40-inch and 45-inch card with any de-

gree of success, owing to the distance between the doffer and the calender rolls. It will be seen that the drafts in column four are much better than those shown in column five, where the draft on the slubber is as long as it should be, and the draft on the intermediate is longer than it should be to allow leeway.

The product of the card delivering a certain weight sliver will be no greater for a 45-inch card than for a 40-inch card, between 45 and 60 grains per yard at sliver.

The weight of sliver will be governed by the drafts in the roving processes following the cards, and to get the best results the drafts should be approximately: slubber 3.6; intermediate 5.0 to 5.5; and roving frame 6.0 to 7.0.

Within the limits stated above, the product of the cards should not exceed

14.5 lbs. per hour for one-inch staple.

10.0 lbs. per hour for one and one-quarter-inch staple.

7.75 lbs. per hour for one and three-eighths-inch staple.

The writer has had personal experience with a mill nearly brought to failure by crowding the product of the cards nearly 50 per cent. above the quantities stated, and seeing the mill rescued by bringing the card product down to the amounts given above. Where the yarn was full of slubs, and uneven and dirty, and way below the standard strength, the later product was clean, even, and above the standard strength.

Where the front rolls on the spinning frames were running 104 to 110 revolutions a minute, they now maintain a speed of 122 revolutions a minute and over, with no changes being made on the spinning frames, except to speed up. The better results were not due to using a better grade of cotton, as the same grades were used throughout, although more attention was given to mixing, the better mixing resulting in increased strength of yarn.

This organization contains at present about 120 45-inch cards.

Where it is possible to obtain as large a product from a 40-inch card as from a 45-inch card, there seems to be no logical reason for installing the wider card. The fact that the wider card has about one-eighth more carding surface does not seem to be of enough importance in practice to warrant the extra expense of putting in 45-inch cards in preference to 40-inch cards.

The writer has a letter on his desk at this moment, from an overseer, who has had experience with both widths of cards on print goods numbers, in which he says he can get better carding on a 40-inch card, and that a 55-grain sliver is about as light as a 45-inch card can make successfully under all conditions, especially in winter.

POWER

Unfortunately the writer is unable at this time to obtain any exact measurements of power consumed by a 45-inch card, but it is known that an organization containing a number of 40-inch cards will consume about 1 h. p. per card, and it is perfectly safe to proportion the machines at this rate for electric induction motors arranged for group driving, as any increase in load above this rate can easily be cared for by the motor, within its overload capacity. As an example, the writer proportioned some group driving in a card room sometime ago, where the groups were made up of 41 40-inch cards, 90 deliveries of drawing, and 4 slubbers, the greatest number of machines being cards rated at 1 h. p. per card. A 50 h. p. motor was installed for each group with the intention of having a constant overload on the motor.

After the installation was made the ammeter at the motors indicated an average load on the motors of about 62 h. p.

With the same number of 45-inch cards, drawing and slubbers, it would be necessary to allow from 33 to 50 per cent. more power for each group of cards, that is, a 75 h. p. motor would have been installed instead of the 50 h. p. motor, and from results that have been experienced with the mechanical drive, there is not much doubt that the 75 h. p. motor would be fully loaded under the conditions stated.

This comparison is made on the basis that the product is such that as many 45-inch

cards would be required as 40-inch cards, the weight of card sliver being 60 grains or lighter.

COST

My paper entitled "Organization of the Carding Department in Cotton Mills," contained an organization for making average 32 yarn, and a diagram showing an arrangement of a card room to contain this organization.

This is intended for a 50,000-spindle mill having 40-inch cards.

If instead of 90 40-inch cards, it should be more desirable to put in 82 45-inch cards, corresponding to the ratio of 11 to 10, there would be no difference in the cost of cards, if the prices are taken at list prices, and there would be no difference in the amount of floor area covered, as the 45-inch card occupies about 9 per cent. wider space than the 40-inch card.

Taking the weight of sliver produced as the same for each width of card, between 60 and 45 grains, then it is apparent that 90 cards would be required. 45-inch cards would cost 10 per cent. more than 40-inch cards; they would occupy about 9 per cent. more floor area, at the rate of about $1.00 per square foot for building, and consume more power at the rate of about $21 per horse power, per year, which means a reduction in the profits equal to the extra cost of installing and operating the wider cards.

ENGLISH PRACTICE

As to the English practice, many Americans look with disfavor on the extra long frames the English install in their mills, but to offset any ill effects due to extra long frames, the English labor is more highly skilled than the average American labor. The English labor is born to the work, while the American labor is continually undergoing transitions.

[This communication will form part of the completed "Transactions of the National Association of Cotton Manufacturers," containing complete report of the discussion.]

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The 28,871,849 spindles in the United States consumed 4,696,316 bales of cotton for the year ending August, 1911.

SILK PLUSH NOVELTIES

BY WEBEREI

Some interesting silk plush fabrics are being introduced for the present season and pile fabrics either of the warp type or of the weft type, such as velveteen, are in great demand.

The following notes on the construction of warp pile and the fabrics illustrated should be of interest. In general warp pile or plush is produced by means of a wire inserting mechanism in which a wire is inserted into a

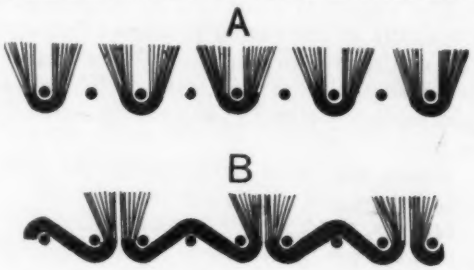


FIG. 1.

shed where all the pile warp threads are raised in order to obtain cut or uncut pile. This method of producing warp pile is shown in Fig. 1. It is an expensive system owing to the low production, but for fabrics having a fairly long pile it cannot be approached.

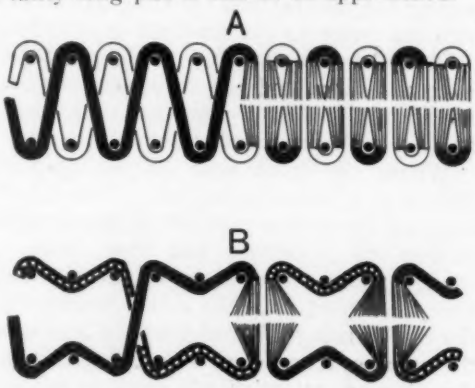


FIG. 2.

The double plush weaving method in which two pieces of cloth are produced face to face is better suited for the production of cloth having a fairly short pile. This method is now being largely adopted, as it lends itself to greater production, the pile wires being entirely obviated, and lower produc-

tive costs result. Not that the fabrics produced are cheap; the bulk of those illustrated which lend themselves admirably for production by this system are retailed in London at not less than £5 per yard, 42 inches wide. The method of weaving adopted is clearly shown in Fig. 2 which, like Fig. 1, shows two methods of binding the pile. That of A is a loose pile compared with that shown at B, in which the pile threads are firmly bound into the fabric.

FIG. 3.

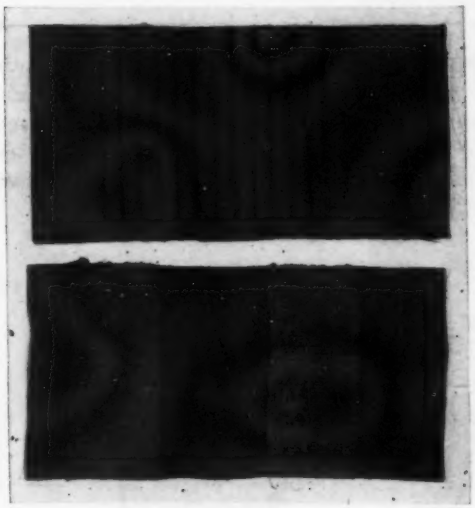


FIG. 4.

FIG. 5.

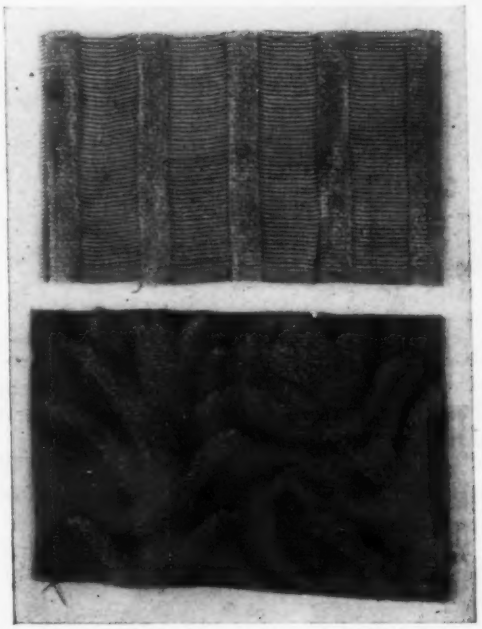


FIG. 6.

Figs. 3 and 4 are simple silk plush stripes. The ground weave in the former weaves

FIG. 7.

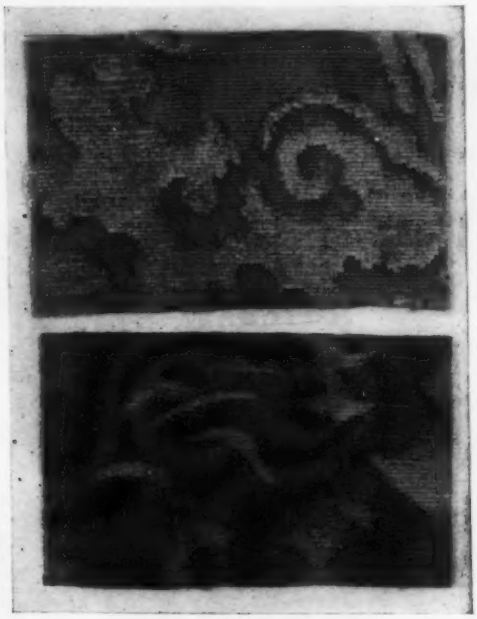


FIG. 8.

taffeta, while in the latter case a satin armure ground is used. Fig. 4 is another striped design, which is especially interesting in view of the introduction of a tinsel weft, which is inserted every third pick in an open taffeta ground, giving a very rich effect when the fabric is draped. Figs. 6 and 7 are fabrics of the same build, but a figured plush is developed on the open texture ground. In these cloths the pile warp threads when not required to form a figure, float loosely at the back and when the pile is cut the loose material is readily brushed away. Fig. 8 shows a figured silk plush in which the ground is of very light weight taffeta.

All these fabrics are admirably adapted for dress goods purposes and are meeting with much favor.

Correspondence and Notes

UPON TEXTILE TOPICS AT HOME AND ABROAD

A HAND BOOK OF WEAVES

By G. H. OELSNER, Director of the Weaving School at Werdau.

(Translated and Revised by Samuel S. Dale.)

(This series of articles began in July, 1911.)

In weaving cloth made of coarse carded woolen warp yarn with a rib weave it is often difficult to obtain a clear shed. Sometimes to facilitate the forming of a shed only one-half of the shafts are changed at a time. This necessitates forming two sheds when the threads are changed. At the first of these two sheds half the warp threads that are to be raised are lifted and half of those to be lowered are dropped and no pick is woven. At the next shed the remaining threads are lifted and dropped to complete the change and a pick is woven, as shown in Fig. 238. This requires a special attachment for the loom. A method of avoiding its use is by the weave shown at Fig. 239, in which half the threads to be raised are lifted on the preceding pick, and half of those to be lowered are raised for one pick more. This, however, causes the break in the rib to be less sharp than with the regular rib weave.

FIG. 238.

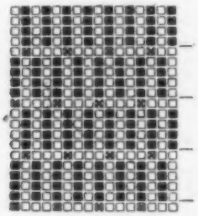


FIG. 239

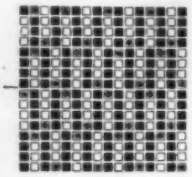
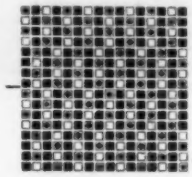


FIG. 240.



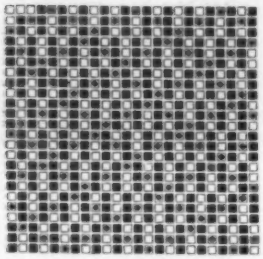


FIG. 241

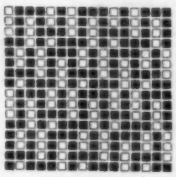


FIG 242.

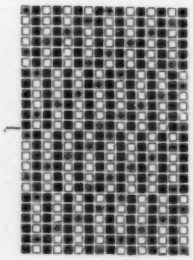


FIG 243.

STITCHED RIBS

To increase the solidity and durability of rib fabrics the warp threads are often interlaced with the filling where the warp floats on the back. This makes the weave tighter and increases the solidity of the cloth.

Fig. 240 is a warp rib stitched with a plain weave. This style of weave is much used for ladies' dress goods.

Figs. 241 and 242 show 6-and-8-pick warp rib weaves stitched to produce a figured effect.

Fig. 243 is a 12-pick rib weave in which the threads floating on the back are stitched

(Copyright, 1911, by Samuel S. Dale)

FIG. 244.

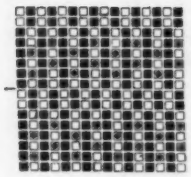


FIG. 245.

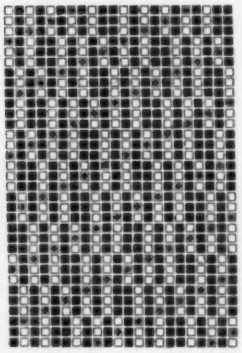
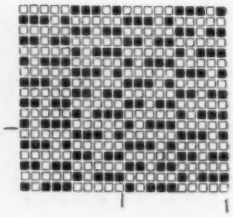


FIG. 246.



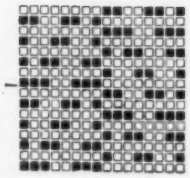


FIG. 247.

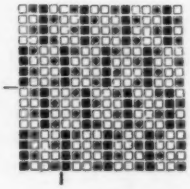


FIG. 248.

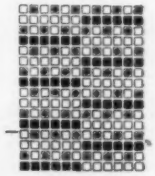


FIG. 249

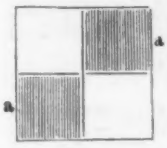


FIG. 250.

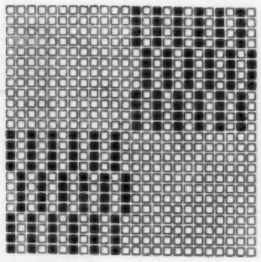


FIG. 251.

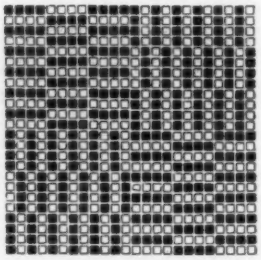


FIG. 252.

FIG. 253

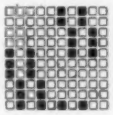


FIG. 254.

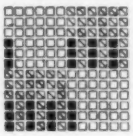


FIG. 255.

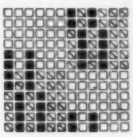
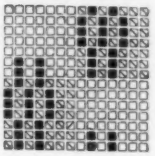


FIG. 256.



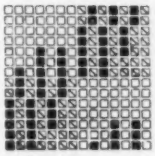


FIG. 257.

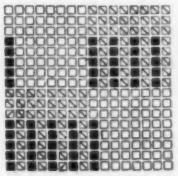


FIG. 258.

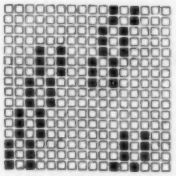


FIG. 259.

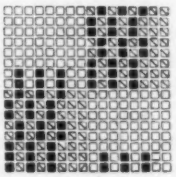


FIG. 260.

in the form of a broken twill, $^{1}/_{3}$.

Fig. 244 is an 8-pick rib weave with the threads on the back stitched plain. This weave is often used for dress goods with the warp dressed 1 light 1 dark.

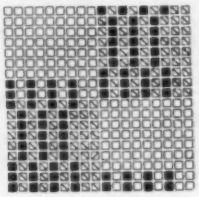


FIG. 261.

Fig. 245 shows an irregular rib weave with the threads on the back stitched in diagonal form.

Stitched filling ribs are shown at Figs. 246 and 247. The filling of Fig. 246 is woven $^{5}/_{5}$ and the floats on the back are stitched on each rib in a straight twill form. The filling at Fig. 247 is woven $^{8}/_{8}$ and stitched in a reversed twill order.

Ribs are sometimes produced with special threads which are not to show on either side of the cloth, and which, therefore, must be very fine yarn. Fig. 248 shows a weave with special warp threads; Fig. 249, a weave with special filling threads. In both weaves the fine threads are woven with a plain weave.

COMBINATION RIBS

Under this head are included all rib weaves in which warp and filling ribs are combined to form a figure. The simplest order of combination is that of a plain weave.

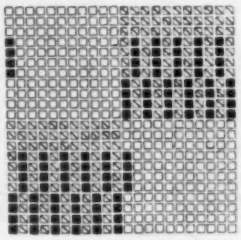
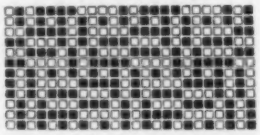


FIG. 262.

The space to be occupied by the pattern is divided into four equal parts as shown at Fig. 250. The shaded parts are then filled in with the warp rib, Fig. 251, and the draft is completed by filling in the remainder of the square with the filling rib weave, see Fig. 252.

FIG. 263.



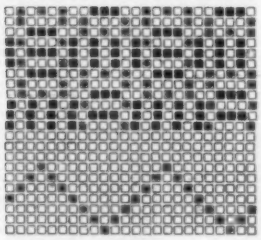
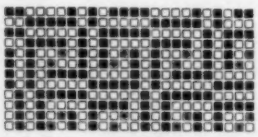


FIG. 264.

FIG. 265



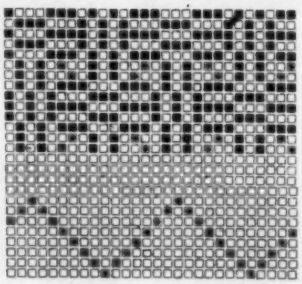


FIG. 266.

If the motif selected is larger than the allotted space the figure must be extended into the adjoining space. Several cases of this kind are shown at Figs. 253 to 262.

These patterns, Figs. 253 to 262, are developed in Figs. 263 to 272, in which the relative position of the warp and filling ribs is readily seen. The threads in the spaces not covered by the motif are woven with a

plain weave and serve to separate the warp and filling ribs.

Following are the motifs and corresponding weaves:

FIG. 267.

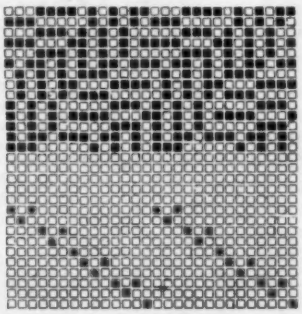
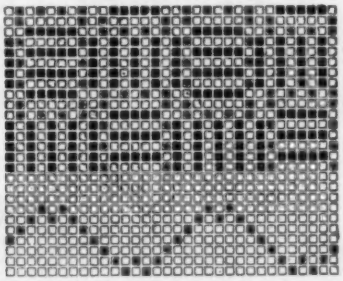


FIG. 268.



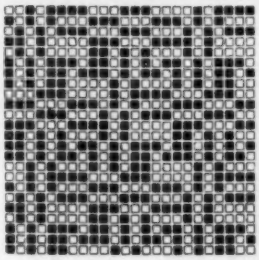


FIG. 269.

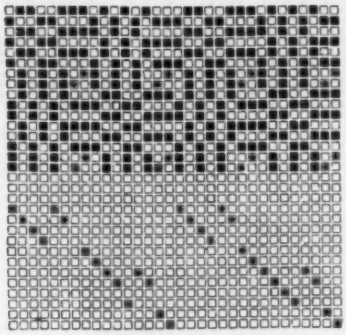


FIG. 270

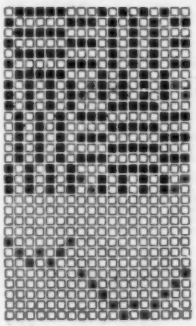


FIG. 271.

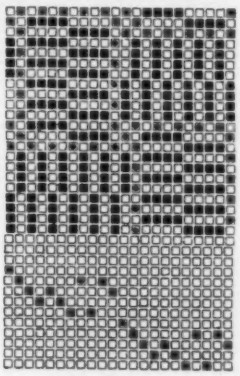


FIG. 272.

Motif.	Weave.
Fig. 253, 10 threads ...	Fig. 263,
Fig. 254, 12 threads ...	Fig. 264, 7 shafts, 12 picks
Fig. 255, 12 threads ...	Fig. 265, 12 shafts, 12 picks
Fig. 256, 14 threads ...	Fig. 266, 8 shafts, 14 picks
Fig. 257, 14 threads ...	Fig. 267, 10 shafts, 14 picks
Fig. 258, 16 threads ...	Fig. 268, 7 shafts, 16 picks
Fig. 259, 16 threads ...	Fig. 269,
Fig. 260, 16 threads ...	Fig. 270, 12 shafts, 16 picks
Fig. 261, 18 threads ...	Fig. 271, 8 shafts, 18 picks
Fig. 262, 22 threads ...	Fig. 272, 10 shafts, 22 picks

Several examples of irregular ribs with a

plain weave for the motif are shown at Figs. 273 to 278.

If a 4-leaf twill is selected for the motif, the draft is first divided each way into four parts and shaded to develop the motif. Fig. 279 shows a 24 end pattern shaded according to a balanced 4-leaf $^{2}—_{2}$ twill, Fig. 280. The warp and filling rib weaves are next inserted, being transposed to conform to the pattern. Fig. 281 shows the pattern at Fig. 279, developed by transposing $^{4}—_{2}$ warp and filling rib weaves.

FIG. 273.

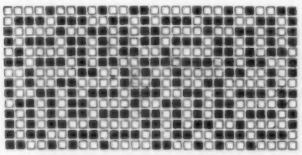


FIG. 274.

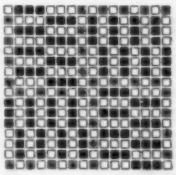
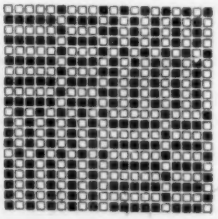


FIG. 275.



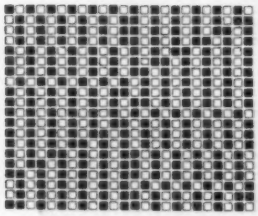


FIG. 276.

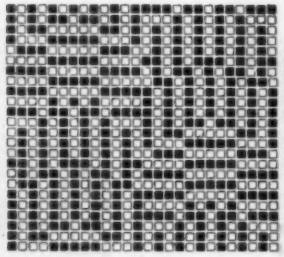


FIG. 277.

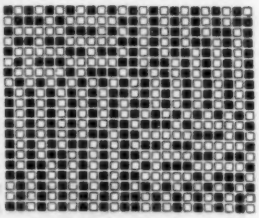


FIG. 278.

FIG. 279.

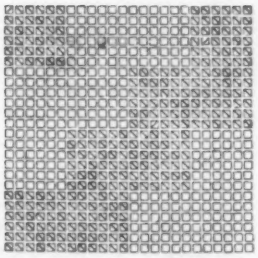
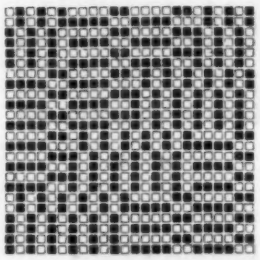


FIG. 280.

FIG. 281.



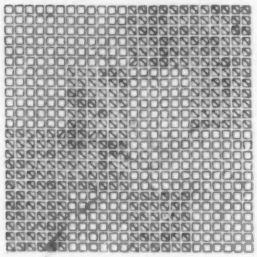


FIG 282.

FIG. 283.

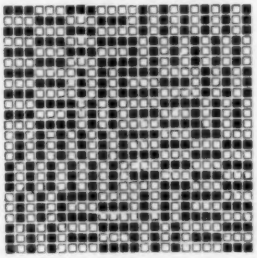


FIG. 284.

Figs. 282 and 284 are respectively outline and weave drafts for the 4-leaf broken $^{2}/_{2}$ twill motif, Fig. 283. This motif is developed on 24 threads by transposing warp and filling rib $^{3}/_{3}$ weaves. In this case the draft is divided into 4 parts to correspond with the 4-leaf twill motif.

Fig. 285 shows a weave draft of 48 threads on which has been developed the 6-leaf satin motif, Fig. 286, by transposing $^{4}/_{4}$ warp and filling ribs. The draft is first divided into six parts of 8 threads each.

From the examples already given it is evident that any desired motif can easily be developed with rib weaves. Some additional examples are shown at Figs. 287 to 299.

FIG. 286.

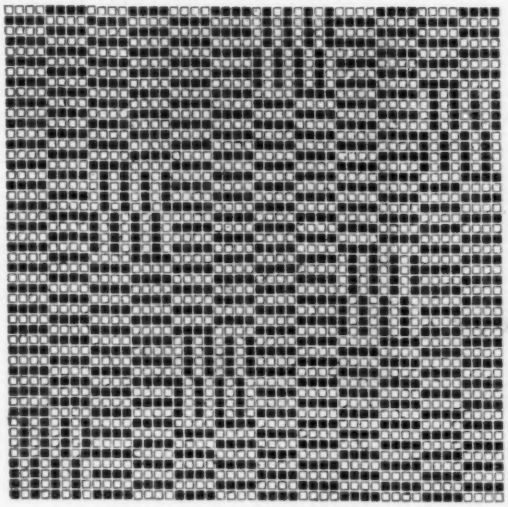


FIG. 285.

ENGLISH NOTES

By Our Special Correspondent

There is a superstition that wool and cotton cannot flourish at one and the same time, but there is not much backing for the theory that they are opposites and irreconcilables and that when one is "in" the other is necessarily "out." Yet it is not uncommon to find the industries at odds with one another. Wool enjoys a boom covering about three years, during which time cotton is at its wit's ends, then the wool boom exhibits imminent signs of a collapse and it is noticed that a cotton boom is incipient. This is the case now and the same thing has happened more than once previously. Even the cotton spinners are doing not too badly despite their

FIG. 287.

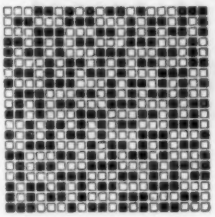


FIG. 288.

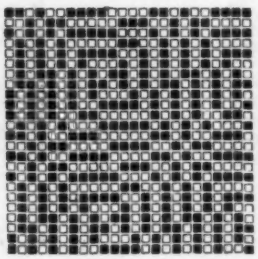
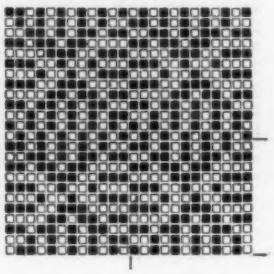


FIG. 289.



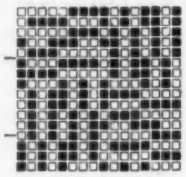


FIG. 290.

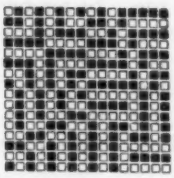


FIG. 291.

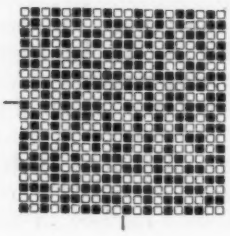


FIG. 292

failure to work short time when urgently pressed to do so by the leaders of the Federation. In the cotton weaving sheds the difficulty is not to get orders and profitable prices but to get hands. It becomes difficult to know what occupations girls find in the Lancashire and Yorkshire towns. Manufacturers used to blame the sewing machine for drawing away labor from the looms, but the sewing-machine owners are, if anything, in a worse case now than the manufacturers. Parenthetically it can be added that the shortage is giving machine makers an opening to introduce new machines of the highest speeds. The outlook in the wool industry is clouded. The dress trade is bad, the strong position of spinners is crumbling away and failing a marked change all manufacturing will soon be upon a seriously less profitable basis.

* * *

Today, as in the past, the wealthiest textile manufacturers in this country are chiefly men who have made their own fortunes. The limited company system gives poor but rising men their chance in cotton spinning. The room and power system of letting mills gives new men an opportunity in cotton weaving. An able, practical man with $5,000 of his own may get $15,000 to $20,000 worth of worsted spinning machinery and pay the balance by installments if successful in creating the right impression on the machine maker. Not a few thriving worsted manufacturers have a wife who has herself worked at the loom. It is historically accurate that the

FIG. 293.

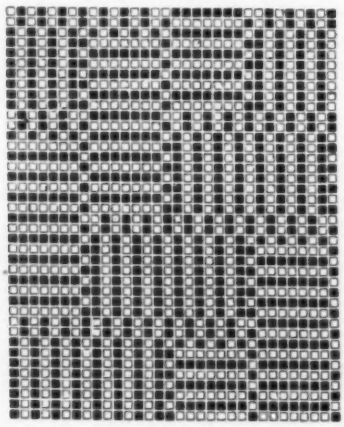
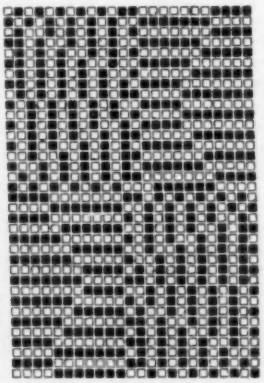


FIG. 294.



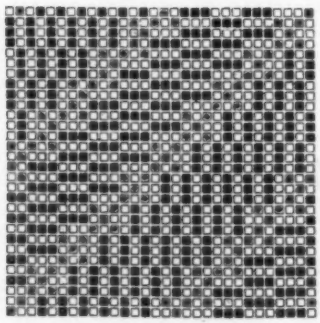


FIG. 295.

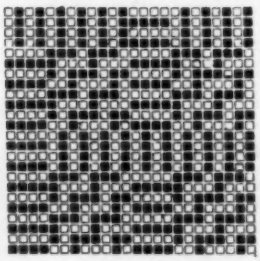


FIG. 296.

present proprietor of the large mills at Saltaire, with the leading maker of 64s tops and yarns in Bradford, and the large hosiery spinner who is the heavy weight of the West Riding County Council, all worked in clogs and corduroys in the mill and all attended the same Sunday-school class. Two are baronets and the third might have a title for the asking. The most successful have not always been those with the most expensive education.

* * *

Americans are disposed to put down to defective education some of the apparent recklessness of Englishmen in estimating costs and there may be truth in the suggestion which has repeatedly been made. The most highly organized mills and those with the best systems of accounting are in general the older and larger ones which have found capable direction at the hands of the second or third generation. The directors of one mill of this class know the production of every frame every day and rival Americans in the closeness of their knowledge of current costs. Such mills form isolated exceptions. A little pains bestowed in inquiry reveals curious facts. What is to be said, for instance, for spinners who lose money when losing it is quite a difficult feat, who have not the least idea how they have lost and will not allow competent and admitted authority to examine their books and methods with a view to a remedy? What for worsted spinners who have consistently lost five cents a pound on their botany yarns for years and have kept afloat only upon their other productions? Or what for another spinner too innocent to know that grey tops can be used for black yarn and at a saving of eight cents a pound on white? The instances are not put forward as representative of the average want of system or information, but they are taken from life and show what can exist. Of systems which are no systems there are legion. Until a few years ago there was, for example, a silk spinner who constructed an imaginary law that credit for silk noils sold exactly balanced the loss of weight involved in gassing yarns.

* * *

Apart from freak systems and sheer slovenliness there is a considerable element of doubt of the worth of elaborate costings even among men who treat detail very seriously. There are dyers, for example, who take the percentages of labor, steam, chemicals, etc., and study them once a month. Other dyers find this exercise more of a good habit than a help. Their work is not necessarily delivered in the same month that it is done and the holding back of a large block of goods extinguishes the moral of monthly percentages. Again, until debits for damages come in, a net turnover cannot accurately be ascertained. Then nearly all dyers doing a mixed business have to make up their minds whether to let one department stand or keep it working at a rate of profit below that necessary for the entire concern. In these difficult circumstances one piece dyer finds the method that is as helpful as any is to assign costs to each process. Scouring is easily settled by using a standard soap solution, so that the dyer knows when he has scoured so many hundred pounds of wool goods he has used so much soap in the operation. In dyeing the

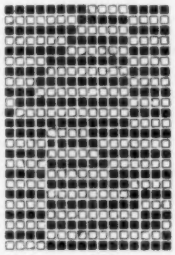


FIG 297.

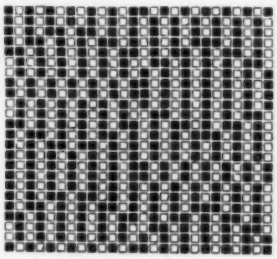


FIG. 298.

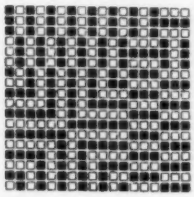


FIG. 299.

costs are based on time—sixty cents an hour for the use of the vessel, including dyestuff and labor. Crabbing, tentering, shearing, pressing and so on are all taken at a price per piece and only at the year end is a net turnover arrived at for the purpose of dissecting the percentages. For purposes of calculation in advance some such arbitrary figures are applied in spinning and weaving. Worsted spinners reckon on certain prices and learn the consequences at stocktaking from the commission-spinning account which they keep separately from their raw material account. On the former they commonly lose.

* * *

The tussah silk noils which have been so much discussed since the decision to place a 35-cent duty upon them, are of two main classes—long and short. The long noils of English production are the by-product of the flat dressing frame. China tussah waste, after being relieved of its natural gum, is locked between boards and subjected to the combing action of steel teeth. The operation is four times repeated to produce the drafts used in long spinning and numbered 1st, 2d, 3d and 4th. What remains in the teeth of the combs is treated as noil. Until a fairly recent date a fifth draft was taken and sold at a higher than noil price under the name of "shorts." But dressing on the flat frame costs 16 cents a pound and those who want to extract the long fiber have Noble or Heilmann combs on which the "shorts" can be combed out at six cents. Dressing a fifth time was found not to pay and consequently silk waste is now "noiled off the 4ths," as spinners say, and long tussah noils contain a proportion of fiber longer than formerly.

The long noil sells for some 26 cents at the present time. There is the medium noil worth about 15 cents, which is the residue of a recombing process, conducted by spinners of short material. Finally there are the shortest noils from which everything over a couple of inches long has been taken. These last are nibby and dirty and worth today about seven cents, or twice as much as in times of less demand.

It is possible to produce an intermediate quality of noils by blending long and short together and there is reason to think this may have been done by dealers. The blending is not to the advantage of the consumer who, by making his own blend, can intermix the lengths more thoroughly and determine with more accuracy what he is paying for. Certain American consumers are preferring to buy long and short qualities separately, in the condition in which they come from the frames or the combs. In anticipation of what November 18th may bring, large shipments of noils have been made from this country. Some of the more speculative wool dealers have taken a hand in the business, but apparently consumers are not encouraging prices to rise beyond a certain point. If the decision to shut the door on silk noils holds good there are still materials to take their place. From time to time large weights of "hard waste" (spun thread waste) come upon the market and this can be garnetted by owners of suitable machines. The European throwsters make a large weight of waste which could be taken in an emergency and no duty could consistently apply to this that would not equally apply to the China wastes out of which tussah spun yarn and noils both come.

If the question is, Are silk noils a by-product? an answer might be found in the form of another question. If silk noils are not a by-product how did it happen that at one time noils were disposed of by throwing them into the river? Within the memory of living man good silk noils have thus been disposed of in the River Calder, Brighouse, Yorkshire.

* * *

Complaints against the hobble-skirt fashion are persistent and loud. For one thing it has curtailed the yardage required for a costume by some 35 to 42 per cent. Four yards or four and a half do the work of seven. It has nonsuited the light weights and all such fabrics as require to be draped to yield the best effect. It has almost done away with underskirts. Even the Bradford people in the best position to profit from the

run on blue coating serges, complain. In France one chamber of manufacturers has appealed to the Government to intercede with the dressmakers. The fashion has done nothing to make costumes perceptibly cheaper and the only manufacturing interest that has conceivably been served is that of spinners of merino worsted yarn. Fashion has been more or less fixed on their material and although length has gone down the average weight per yard has gone up.

* * *

The dolls' hair trade is more important than a casual thought might lead one to suppose. Not less than 30,000 pounds is produced every week in Bradford, where more parties have been going into the business. The demand is for good bright, crisp hair dyed to lifelike shades. The raw material is English cross wether wool which, after being scoured and combed, is dyed and put into balls. The sliver is passed through a curling machine which until lately was the exclusive property of one manufacturer. The curled and dyed sliver is sent to the doll makers packed in paper bags. Human hair in the form of pigtails from China has been imported and combed for some years. The tops have a use as covers for the frames or "rats" used in feminine hairdressing and also for filter and press cloths. While the business in human hair is of quite subsidiary importance, it is still possible to find as many as two hundred bales of it in stock in one warehouse.

AS PUNCH SEES BRADFORD

Now that the holiday season is nearly over, it seems proper to remind serious and responsible people that there are other places one can go to besides Badgastein, Nether Achnaharacle and Margate. Bradford is a most interesting place for an autumn holiday. It is never crowded with trippers, either monthly or week-endly. It is possible at Bradford to get away from the band; and there are never any pierrots to disturb one's afternoon siesta on the banks of the Aire. However, the purpose of this article is not to boom Bradford as a health-resort; the idea is rather to be didactic and informative.

The chief industry of Bradford is Woolcombing, and there are few more picturesque sights in any part of the world than the convergence upon the main highways leading to Bradford of hundreds of thousands of sheep which arrive, twice a year, from all parts of the surrounding country, and even from Scotland and Wales, to have their wool combed. This process used to be performed locally; and in remote places small holders may still be seen combing their own sheep. But the progressive owner realizes now that it is cheaper to send his flock into Bradford twice a year for this operation, which not only gives the sheep a much tidier appearance, but stimulates the growth of its wool and improves its general health and spirits. Unfortunately for the purposes of the journalists, woolcombing is a secret process; and my attempt to get into the comberies, disguised as an elderly ram, was frustrated. But I was fortunate in meeting many sheep, both Before and After, and was much struck with the improvement in their appearance. Many had evidently indulged in a singe and shampoo also.

Next to woolcombing, in respect of the Bradford man, comes the mohair trade. As the name indicates, this staple depends upon a comparatively little known animal, the mo, which is fortunately plentiful in Asia Minor, South Africa and the Argentine. The Asian or African mo must not be confused with the commoner British variety, distinguished, for trade purposes, by the prefix Ikey. It is curious to think that there are dozens of Bradford men, each with two motor cars and a grouse moor in Cumberland, who have never set eyes on their benefactor, the mo. Thousands of miles away, on the High Veldt, the mo moves day after day in his orbit round a peg, to which he is attached by a long strand of his own hair. His one object in life is to feel it growing. At night he is corralled by his keeper, dexterously and painlessly shaved with a 16 to 20 h. p. safety razor, and turned loose to accumulate next night's crop. The hair is then packed in bales, and shipped to Bradford, whose motto is, "The mo the merrier."—London Punch.

REMOVING SPOTS AND STAINS FROM TEXTILES

BY ROBERT DANTZER

Translated from the French by the Editor of the Textile World Record.

(Continued from October.)

Methods of Removing Spots. The materials used for removing spots are generally applied with a fine sponge or a plug made of cloth wound in a small roll, or a small piece of white flannel. When a large piece of cloth has become stained and is to be cleaned it is first sprinkled with hard wood sawdust in combination with benzine. The sawdust is then rubbed gently and uniformly into the piece of cloth, which is impregnated with the benzine and then placed in a cask which receives a rotary motion. A quantity of hard wood sawdust is also placed in the cask with the cloth. The use of sawdust results in a saving of 25 per cent. in benzine and the shade of the goods is not altered at all. After taking the cloth from the cask the sawdust is removed by a slight beating.

The nature of spots on cloth varies as widely as the manner of removing them. A simple spot is one formed by a single substance and generally requiring for its removal only one material. A compound spot is one caused by the presence of two substances and generally requires for its removal a separate removing agent for each substance. Some removing agents alter or even destroy the colors, while other have no effect on them. The first thing to do before proceeding with the work of removing spots is to determine the nature of the stain. This is a practical question whose solution requires experience; even then the task is at times insurmountable.

Mineral Acids. When a spot has been recently made with mineral acid it is removed by washing with liquid ammonia diluted with water or by exposing the cloth to ammonia vapor. When the goods have been spotted for a long time and the color has been affected the only remedy is redyeing.

Butter. These spots are removed in the same way as are grease spots, that is, by the aid of turpentine, benzine, etc.

Beer. The same process is used as in the case of fruit stains.

Spermaceti. These spots are usually removed by friction, as this material does not penetrate the fabric.

Mud. When the mud consists entirely of earthy matter the spots can usually be removed by washing in clear water. If they do not disappear apply the yolk of an egg slightly diluted with water, then rinse in clear water. The mud found in cities is more difficult to remove because it usually contains more or less vegetable matter and particles of iron. In that case two operations are necessary, first, the cloth is subjected to one or more rinsings in hot water, then in cold water, in order to remove the bulk of the earthy and vegetable substances. The metallic substances are removed as in the case of rust spots, that is by covering the spots for several minutes with a coating of cream of tartar slightly moistened. Cloth that has been dyed red is often changed to a violet by coming in contact with mud. The color is restored to the original shade by applying a weak solution of citric, acetic or hydrochloric acid.

Candle Grease. The same process as for wax spots.

Coffee. These spots are removed from white linen by washing in clear cold water, then in a solution of soap at a temperature of 120° F. Sometimes it is necessary to repeat these operations, after which the cloth is exposed to sulphur vapor. The same treatment can be used for dyed or printed goods. For delicate shades which the soap might alter it is better to substitute the yolk of an egg slightly diluted with tepid water. If the spots are old a few drops of alcohol is added to the solution.

Axle Grease. This consists of grease and iron. Commence by removing with a knife all the grease that has not penetrated the fabric. Turpentine is then poured on the spot and the cloth rubbed lightly with a sponge. Turpentine is again applied and fine ashes or pulverized pipe clay is sprinkled over the spot. At the end of fifteen minutes the pulverized material is removed and the

cloth is well brushed. If the spot has not entirely disappeared the operations are repeated. If, as is rarely the case, the spot still resists, the cloth is subjected to the operations for a third time, but using the yolk of an egg with the turpentine. If the spot is old it may prove impossible to remove it with turpentine. In that case oxalic or hydrochloride acid is used, as in the case of an old ink spot. Beef gall can be substituted for the yolk of an egg, and benzine for the turpentine. If these solutions fail to remove the spot success sometimes follows the use of the following:

Water	10 parts
Chloride of tin	2 parts
Hydrochloride acid	3 parts

Chocolate. The same process as for coffee, but the spots are more easily removed.

Cider. The same process as for fruit stains.

Wax. If the wax causing the spot is pure it can often be removed by slight friction. When the spots are old it is generally necessary to apply benzine or refined alcohol. Then the cloth is rubbed with a fine sponge and the essence of lemon, lavender and turpentine may be used, also the following mixture:

White soap	15 parts
Pure potash	3 parts
Essence of juniper	1½ parts

When the wax is mixed with tallow, as is often the case, benzine should be used. Stearic acid spots are treated in the same way as wax spots.

Paint. The same process as for wax, grease, oil, etc. As the paint is always composed of a number of different materials several operations are usually required. The grease or oil is first removed, after having softened the cloth with vaseline. The other substances are then removed by suitable operations which only experience can determine. For delicate fabrics chloroform is used to make the solutions.

(To be continued.)

NOTES ON COTTON CARDS

BY INVERNESS

In order to have a cotton card turn off good work it is necessary that the clothing should be kept sharp and the settings carefully adjusted. A good card grinder who is steady, knows his business thoroughly and also takes an interest in his work, is a valuable man and every effort should be made to retain the services of such a workman. I think nearly every overseer will admit that at the present time such men are rather hard to obtain.

If the clothing is kept tight on the cylinder and doffer, and ground every three or four weeks, by grinding rolls which run true, and after the card is ground if the setings are made as close as possible, good carding is sure to be obtained. I have inspected cards which have had patches of wire broken out three or four inches square, in many places on the same cylinder, and the doffer also would have much of its wire gone. The top flats contained not one-half the full number of points, and set too far from the cylinder, the licker-in teeth so badly worn by years of work that after the card had run an hour the cover over the licker-in would be uncomfortably warm owing to the excessive friction caused by the dull points of the licker rubbing through the lap and injuring the staple. Add to these defects cases where the under screens have had large holes rubbed through them by coming in contact with the delicate points of the cylinder clothing, and we have a combination of defects sometimes met with in poorly managed mills, with the result that the quality of the carding is bad, and as a consequence the yarn spins and weaves badly, making excessive waste, poor goods, low production and causing overworked, dissatisfied help. In poorly managed card rooms where the small details are not looked after, I have seen the flat chains so worn after a few years that the flats would hang two or three inches below the bowls on the back shaft. Every few minutes a loud rasping sound would be heard for a period of three or four seconds, caused by

the loose chain not passing the steel back plate properly, but getting twisted and forcing the back plate against the delicate teeth of the card clothing. This destroys the sharp points and in some cases causes the wire to raise the foundation and damage the clothing. Grinding rollers not running absolutely true is sometimes considered of slight importance. In actual practice this is most necessary, for if the grinding disc is out of position only a small part of the circumference is doing any grinding. This results in the card receiving very little grinding, although the rolls might work on the card for a full day. If the grinding roll is sprung it will have a tendency to grind the cylinder or doffer more in the middle than at the ends, making a hollow cylinder, with the result that while the doffer may be set to a 6/1,000 gauge at the ends it will be much farther away at the center. The flats would also be too far away from the cylinder at the center, causing poor work.

As the top flats can be ground when the card is running, it is good practice to have a number of solid grinding rolls operating on the flats all the time. Both the solid long grinding rolls and the traverse disc rolls should be covered with a good quality of emery filleting. I have seen long rolls grinding flats when the rolls have been almost bare of emery grains upon the surface, just a few grains here and there, and three-quarters of the grinding surface nothing but bare board. Renewing the emery filleting often, especially upon the traverse rolls, is important if good grinding is desired. When the emery becomes covered with grease and dirt, and the sharp cutting points have become so worn that they are rounded, it is very poor economy to use it longer as it will not cut the hardened wire as it should, but will simply smooth or polish the surface of the clothing and will not give the keen pointed tooth so desirable for good clothing. Considering the slight cost of the emery filleting required for a traverse roll, it would be good practice to renew it every five or six weeks, if the rolls are being used steadily. I have known cases where the grinder, not being able to secure new emery filleting, would try to remove the grease from the roller by cleaning it with turpentine. Even if this would successfully remove the grease we should still have the worthless emery grains with their cutting points destroyed.

CALICO PRINTING AND THE BRITISH COTTON INDUSTRY

BY WESSEX

The improved profits of the (English) Calico Printers' Association have prompted a correspondent to ask how it happens that a concern like this does extraordinarily well in a year in which the cotton enterprises of the world at large have fared very badly. He justly infers that something in the peculiar structure or organization of the Lancashire cotton industry is in part answerable for the fact. The "C. P. A."—to give it its short title—does not spin and is consequently cut off from that section of the trade which is temporarily the losing one. This, which is an advantage today, may be a disadvantage in some succeeding year when spinners can make money and manufacturers and printers can barely hold their own. The Association is primarily a printing and finishing company and the owner incidentally of a number of automatic looms. Recent conditions have favored those who consume yarn and have been against those who produce it, but it is a fair assumption that a large part of the $3,700,000 gross ($2,015,000 net) profits have been produced in printing merchants' cloths on commission.

The Association had, to begin with, some 830 printing machines and 46 branch works and of the latter some are large ones. Gartside's has 74 or more machines, Potter's 51, S. Schwabe's 40 and Thornliebank 45. The C. P. A. is the chief power in the English calico-printing trade, but it has domestic as well as Continental competitors to moderate its prices. It has to pay 4 per cent. on sixteen million dollars of debentures, 5 per cent. on fifteen millions of cumulative preferred stock and a return on ten millions of ordinary stock. Obviously the Association has heavy establishment expenses and in order

to maintain a high production requires a great quantity of work. In these respects it is like any undertaking of its size and in calico printing there is a special necessity for orders for long runs to one pattern. Coupled with this is the necessity, incumbent on any concern wishing to dominate the business, of producing a great number of designs in the utmost possible variety. Long runs and a great variety are in a degree inimical, but unless the Association can give the class and number of designs that the markets require orders must perforce go to those who will put the fancied designs before the customer.

Considering the vast range of artistic and inartistic taste in color and design and the great number of finishers needful to satisfy merchants whose market is the whole world, it may be believed that a company of this magnitude and complexity is not easy to manage. In point of fact those who have tried its management have not found the task easy or their success conspicuous financially. The Association was formed in 1899 and some time elapsed before there was any dividend. Since dividend paying began the results have been as follows:

On $25,000,000 ordinary:

1902-03	2½%
1903-04	2½%
1904-05	2½%
1905-06	4

On $10,000,000 ordinary:

1906-07	6¼%
1909-10	2½%
1910-11	3¾%

In the beginning the C. P. A. suffered from too large a directorate and from the manifold difficulties attendant on attempts to centralize the control of a large number of complex, isolated businesses, each of which had grown up in its own individual way. Apart from the condition of trade it may well be that the management has become more effective. One highly important condition has latterly been in the Association's favor, for there has been a large export of printed cloth. In eleven months of 1910 the export was more than 212 million yards larger than in the equivalent period of 1909 and this must naturally give the largest calico printing concern a fair chance of minimizing the dead weight of its standing expenses. As an individual print works has been known to lose money in one year and make $75,000 the next, prices resting unchanged in the interim, one may see the effect of a low production. Dyeworks are probably less susceptible to sudden change, but one of these has been known to make $50,000 more in one-half of the year than in the other. The C. P. A. in the first halves of the last two years has profits approximately equal and the present improvement is apparently all due to the working of the closing six months.

The goods printed go to all countries, but the great market is India where the machine-printing industry is in its very early youth. Turkey is the market next in importance for English prints and the Dutch East Indies, the Spanish American countries, Canada, Australia, the West Indies, West Africa and South Africa are all large consumers. It is enough to name these places to illustrate the immense variety of taste and prejudice to which a calico printer has to minister. In practice, particular works address themselves to particular styles of printing especially suitable for certain markets. In the same way the commission houses or "shippers" to whom the calico printer sells confine themselves to particular markets and to the relatively limited class of cloths and designs suited for them. The business divides itself naturally into markets of which the United Kingdom is only one out of a number. The sales department of the C. P. A. has accordingly been reorganized on geographical lines and the goods of its forty and odd branches are to be sold not by this branch or that, but by the sales office for this or that country. The salesman, instead of offering the products of one printworks, will show all the designs made by all branches suitable for the department he works in. To bring all the selling and administrative departments under one roof a building costing about one million dollars is being completed in Oxford St., Manchester.

Given a good all-round demand for printed cotton cloth the printing industry may flourish independently of the misfortunes which overtake spinners or grey-cloth pro-

ducers. In printing, some weaving and some merchanting of printed handkerchiefs, cloths, flags, cretonnes, etc., the management has fully enough to do without courting the risks that spinners bear. Such an Association as the printers' could hardly be made more efficient as a printing concern by attaching to it either spinners' or mercantile responsibilities. The dyers' and bleachers' Associations have divested themselves of conflicting functions in order to devote themselves wholeheartedly to their primary business. The large amalgamations of capital which have transformed the face of ten departments of the cotton industry have rather confirmed than destroyed the idea of one-man-one-job.

Presumably the original spinner was a spinner because he could spin and found the sale of yarn more convenient than the weaving of it. After he had invested in machines in the early days of the industry he had possibly little money to buy looms and had not always any material incentive to buy them. Spinning involves the lock-up of large capital and any individual starting in a modest way can buy looms much more readily than the elaborate plant for carding, preparing and spinning. Accordingly the spinning business falls in Lancashire to joint-stock companies and weaving to private firms. The weaving manufacturer does not do his own finishing or printing, partly because of the infinitude of different finishes required by so cosmopolitan a market place as Manchester. Except in some isolated specialty the weaving manufacturer could hardly hope to beat the practiced all-round finisher either in price or in the perfection of the very different results sometimes demanded. Spinner, weaver, bleacher, dyer and printer are close to each other in point of situation and there is a choice of each. The weaver has his pick of yarn, the merchant has his pick of manufacturers and it is usually the merchant who decides when the cloth shall go to be bleached, dyed or finished. The structure of the trade at least favors mobility and allows changing demands to be followed up. There is no waiting for one universal producer to adapt himself to every passing need. One gets what he wants here, there or somewhere else.

There may be at any given time a conflict of the fortune of all or any of these parties and there are other minor antagonisms to which attention may be drawn in considering the contrarieties of the trade. The cotton broker's 1/2 per cent. on 20 cent cotton is substantially as good as 1 per cent. on 10 cent cotton. The yarn agents and grey cloth agents who sell the products of the mills on commission draw money on a higher invoice total when goods are dear. The exporting merchant does not always make most money when the bulk of trade is at its height and, much as spinners may want cheap cotton, he finds no satisfaction in a fall which depreciates customers' stocks so far as to cripple their resources. The middlemen do not necessarily lose from conditions which make producers keen to have more work, willing to cancel inconvenient contracts or ready to relieve them of the necessity of holding their own stocks.

The particular organization adopted in England has not been devised with a view to enabling all parties to prosper at one and the same time. It is the outcome of a close localization, widely diverse needs, differing abilities, shortage of capital, large opportunities, keen competition and a hundred other hodge-podge factors which have caused men to stick to that which they can do best. No system allows the small manufacturer to do quite as well as the large one, but the specialization of function gives even the small man a chance to keep his plant efficient. The combines, of which the Calico Printers' is one example, make their own mistakes and most of them suffer from an officialism from which the smaller manufacturers are free. For instance, an official does what he is told to do, knowing it to be an inadvisable thing and contrary to the best policy; knowing also that any arguments, protestations and demonstrations made to his official superior will be received more unfavorably than if made to the principal in a private firm.

There were 4,820 textile establishments in the United States in 1909, as compared with 4,268 in 1904, and with 4,100 in 1899. The value of the products in 1909 was $1,592,482,000; $1,164,706,000 in 1904; and $886,883,000 in 1899.

CROSSED WARP EFFECTS: AND SOME METHODS OF OBTAINING THEM

BY W. W. MARLAND

From the Journal of the Manchester Textile Society

(Continued from May)

When in the bottom doup, the slip half works in a comparatively slack heald, and so there is not the same wear

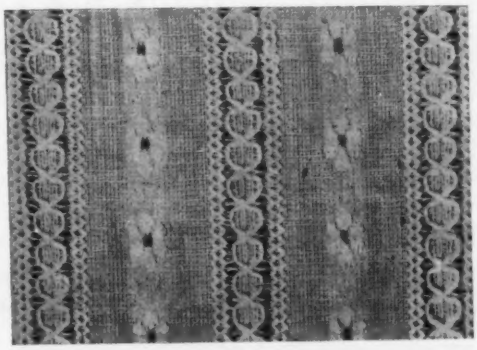


FIG. 7.

and tear. You may ask, "How long will a set of doups last?" This varies a great deal according to the work they have to do; a vein or "allover" leno, made with single twist and sized yarns, will cut a set of doups up in half or quarter the time of a net made with two-fold yarns. I have known a set of doups to be practically useless after weaving 100 to 200 yards of "allover" leno, 15 picks per quarter, while in weaving a net stripe with bottom doups, I have known the doups to weave 60 cuts of 40 yards each, or 2,400 yards of cloth, 15 picks per 1/4 inch, and then not be in what could be called a bad condition. Besides the ordinary doup work, methods have been adopted for the production of 2, 3 and 4 doup effects by means of one doup, this being done by means of 2, 3 and 4 back standards. The cloths illustrated in Figs. 6, 7 and 8 give examples in this style.

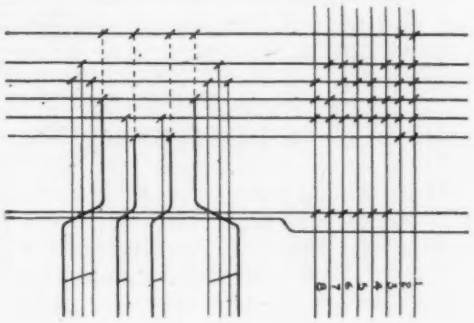


FIG. 9.

FIG. 8

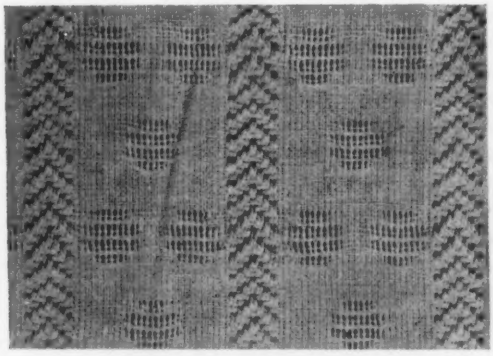


FIG. 10.

In Fig. 9, the draft and lifting plan for the cloth shown in Fig. 6 is given; this also shows that yarn from two beams come

through the same doup. I will now go a step further and show how leno brocade effects are produced from one doup. For the cloth shown in Fig. 10: one doup, eight back standards, one slackener, two plain and four figure shafts, or 17 hooks in the dobby are required, see Fig. 11. When weaving the plain portion in this cloth, and in fact all through, we have to slacken every other pick, thus placing a severe strain on the doups, so that they soon get worn out. It is doing very well if we can get 800 yards woven with one set of doups. The cloth shown in Fig. 12 takes 10 back standards and is a more difficult cloth to make, though it is woven on the same principle.

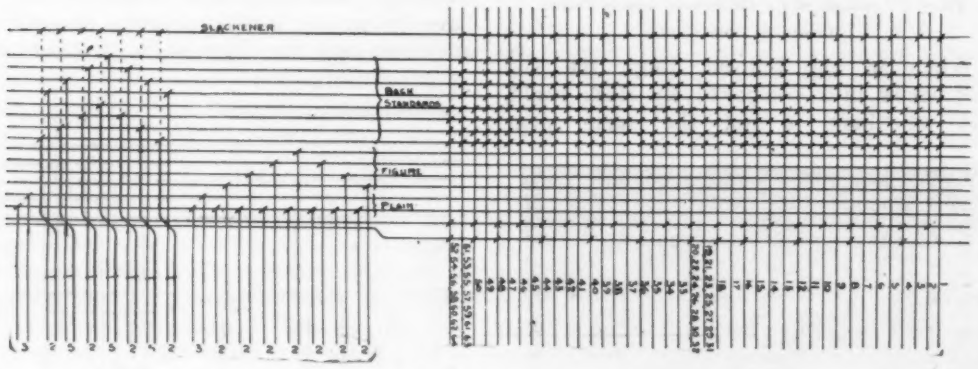


FIG. 11.

These difficult cloths make me want to say a word about the prices paid for weaving them, and to show that the weaving prices for lenos need revising. The uniform list says that 70 per cent. shall be added for one doup and 10 per cent. more for every additional doup, though it does not make any difference between a plain net stripe of, say, 40 leno ends of a two-fold yarn, and an "all-over" lenno made with 60s or 70s twist and a solid mass of doups all the way across. If the reed and pick is the same, they will be paid the same price for weaving, though I think it will be evident to all those conversant with leno weaving, that the weaver will not make the same money on the "all-over" leno as she will on the net stripe, while she would have two or three times more work to do. The Colne colored list makes provision for this. Personally, I think it much better for the weaver and all concerned, both overlooker and master, for margins of profit are generally based on the weaving price, and if merchants will have cloth which is difficult to make, they should pay more for it, giving the advantage to the weaver.

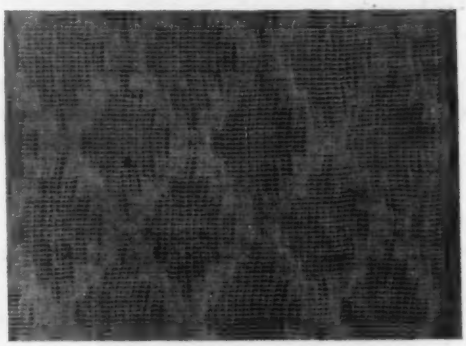


FIG. 12.

The shipments of cotton piece goods from the United States for the year ending June, 1911, amounted to 346,590,000 yards, as compared with 309,911,000 yards in the same period of last year.

The cotton goods manufactured in the United States during 1909 were valued at $629,699,000; the hosiery and knit goods were valued at $200,143,000; the wool manufactures at $507,219,000, and the silk and silk goods at $196,475,000.

CHAMELEON TAFFETAS

BY JAMES CHITTICK

As samples of chameleon taffetas are at present being shown by a considerable number of silk houses, the writer feels that the moment may be an opportune one for presenting some remarks on the subject that may be of interest. As is well known, the chameleon taffeta is usually made with one color in the warp, and with alternating picks of two other colors in the filling. These colors should all differ sharply from each other, and at the same time should harmonize in combination. Thus, as a heliotrope warp might be woven in fillings of apple-green and pink, and, if suitable shades have been selected, and if the materials used in warp and filling have been properly balanced, or proportioned, the appearance of the fabric should present the beautiful, irridescent effects to which the name of chameleon has been given.

In some cases two colors are also used in the warp, in addition to the two in the filling, the warp colors being arranged end and end. The filling, also, may be all of one color, with two colors in the warp, but the construction would have to be of an exceptional character to obtain desirable color effects in this manner. The construction with a solid colored warp, and two colors in the filling, is the usual one. There are three customary ways for the weaving in of the filling. One is to put in a large number of picks, each pick of each color being woven in separately. Another is to have the two filling colors wound together on the same shuttle bobbin or quill, and woven in that way. The third is to have specially constructed shuttles, carrying two bobbins, or quills, one for each color, and lay in the filling by that means.

As each full pick in the cloth is composed of two different colored threads, it follows that each has to be fairly fine in size, so a two-thread—or sometimes a three-thread-tram, generally made from 13/15 denier silk, and weighted according to the requirements, is customarily used. Where the picks are laid in singly, a box-loom is required, and the cloth will probably be made with from about one hundred and sixty to one hundred and eighty picks to the inch. This is woven with two picks in the same shed, and, as the lay beats up on each pick separately, it ensures its being firmly fixed in its place, and so prevents any tendency to overlay or twist about its companion pick, a very serious defect. Goods constructed in this manner can be relied upon to be merchantably perfect, and it is the way in which they should logically be woven. Unfortunately, the large number of picks makes the production very slow, and increases immediately the weaving cost, and the general expense item of cost, as well as the quilling, in addition to some other minor outlays. This great increase in cost does not show in the fabric.

When the two different colored filling threads are to be worked together, whether they be of two-thread or three-thread tram, they are first wound, and are then doubled, and afterwards wound together upon the filling bobbin. The doubling may be dispensed with and the two ends may be united in the quilling process, although more even work usually results if they have first been doubled. By redrawing, or transferring, the silk onto other bobbins after winding and before doubling, a much more even tension is obtained, and the work is improved. Nevertheless, in spite of all the care that can be taken when this method is employed, the threads will persist in twisting about each other and overlapping in an absolutely uncertain manner.

The result is seen in the irregular color streak, or rays, that will run into the cloth for several inches from each side. If the colors of the fillings happened to be pink and green, we might see pink or green streaks, say from one-eighth to three-eighths inches wide, or whatever widths they might chance to be, irregularly alternating in the weft. These defects might only run for a few inches, or they might run for very many yards, continuously or intermittently through the piece. There is, in fact, no assurance that they may not occur anywhere, and continue for any distance. In practice, the fact is that they do so occur, and it is impossible to guarantee that any piece of goods, made

in this fashion, will be free from this class of effect, and the writer has seldom seen a piece, as made, that was not badly marred by it. These fabrics, in ordinary qualities, would be woven with, say, between about eighty picks, if made with two ends of three-thread tram, and about ninety to ninety-six picks is made with two ends of two-thread tram. The construction would be relatively cheap, and the goods could be made to sell at popular prices, and can be woven on single-box looms. Of similar cost, and construction, would be those cloths in the making of which the double-quill shuttles would be employed.

By the use of the double-quill shuttle, a thread of each of the colors is laid in the cloth simultaneously, but, as they both beat up together, they still are likely to be placed irregularly, and so produce the undesirable effect referred to, instead of being firmly set in their proper relative positions as is the case when each thread is beaten up separately. It is desirable, also, that the shuttles made for two quills be provided with brass bows, which help to lay the picks more nearly at right angles to the cloth, and thus assist in giving it greater smoothness and regularity.

The manufacturer who has been making the plain 52 1/2 cent cloth on a large scale, on a very economical basis of production, and with hardly any profit in it, cannot undertake to produce the chameleons for the same money. His preparatory work costs more, there is greater wastage of material, the orders will be relatively small and intermittent, and, on a new fabric, he will naturally want a little better profit. He will therefore get up his samples, and, if made on single-box looms, and with the two colors of filling wound on the same quill, will produce a fabric of corresponding quality, priced at, say, 57 1/2 cents, to retail at 85 cents. Should he use shuttles carrying two quills, his cost would not be very different. At the same time, he might also get up a line of samples in which each color in the filling was woven in separately. It is true that, on account of the large amount of "invisible cost" in such a fabric, he might find it usually desirable to make the goods of a distinctly better quality, and in a somewhat wider width, so as to appeal to a wealthier class of trade, and enable a reasonable sale to be found at the necessarily much higher price. If, however, he made them in the same quality and width as the standard 52 1/2 cent plain cloth, and having consideration for the fact that, with the production based on, say, one hundred and eighty picks on a box-loom, as compared with ninety picks on a plain-loom, the profit per yard should be more than doubled in comparison, in addition to the increased weaving and general-expense costs, then, his proportionate price on these properly manufactured chameleon taffetas should be at least 75 cents a yard, at which cost the buyer would usually not design to retail them for less than $1.10 a yard, and would probably try for $1.25.

CARBON TETRACHLORIDE; MIXTURES WITH NAPHTHA

By J. ALBERT ROBINSON, Inspector
The Underwriters' Bureau of New England

It has been a matter of deep regret among underwriters and fire protection engineers that no suitable non-inflammable substitute for naphtha has been found. We occasionally hear that a process of rendering naphtha non-hazardous has been perfected, but the recurrence of fires and explosions, resulting in death and destruction, disproves the practicability of any such discoveries.

The non-hazardous, but otherwise similar, properties of carbon tetrachloride are well known, but its high cost has limited its use to a very great extent, as well as a lack of information concerning its adaptability on a commercial scale.

The development of the electrolytic cells for the production of chlorine and caustic soda, with the consequent cheapening of chlorine gas, has cheapened the process of producing carbon tetrachloride. Coincident with this, the process of manufacturing carbon-bisulphides has been improved and cheapened. Chlorine gas is passed over heated carbon-bisulphide and the products

condensed in a cooler. A mixture of carbon tetrachloride and sulphur dichloride is obtained ($CS_2 + Cl_6 = CCi_4 + S_2 Cl_2$), and by introducing caustic soda or potash into the mixture the sulphuric dichloride is decomposed and dissolved, the carbon tetrachloride separating and falling to the bottom of the receptacle, being afterwards purified by distillation.

Carbon tetrachloride is sold in 100-gallon drums and smaller lots in containers. It is sold by weight, there being 13 1/2 pounds per gallon. Present quotations are about ten cents per pound in drums, with an advance of from one-fourth to three cents in smaller lots; five gallons being quoted about 13 cents.

Carbon tetrachloride is a clear, colorless volatile liquid with an agreeable aromatic odor. Specific gravity 1.604 and boiling point 78° C. It is non-inflammable and non-explosive and its vapors extinguish fire. It is an excellent medium for extracting oils from seeds, fats, animal tankage, wool, cotton, etc., and this in a shorter time than will naphtha. There is some doubt as to the ability to recover the last traces from the press cake, and this has been detrimental owing to the high cost. It has not been certain what effect the use of carbon tetrachloride would have on apparatus designed for the use of naphtha. A large number of experiments have been made to determine the adaptability of metals to withstand the corrosive effect of the solvent.

It was decided to make tests with naphtha of various gravities and varying proportions of carbon tetrachloride, tests to include flash and fire points, determined with the New York Board of Health tester; evaporation test to determine if the proportion of mixture remained constant when vaporized; and explosion test in an oven designed for this purpose, in which known quantities of vapor can be introduced and exploded. These tests were not carried out, however, as a series of tests of an exactly similar nature were conducted by Edward A. Barrier, member of the American Chemical Society, and the results in detail were published in the Journal of Industrial and Engineering Chemistry, Vol. 2, No. 1, p. 16, issued by the American Chemical Society. This work was done in such a scientific, thorough and practical manner that it seemed needless to duplicate it, and the conclusion which he derived from his tests can be accepted without reserve. It did not seem essential to include a detailed account of his work or the tables of data obtained. As a result of his tests the following conclusions seemed warranted to Mr. Barrier:

1. A certain percentage of naphtha can be added to carbon tetrachloride and still leave the mixture free from fire and explosion hazard.

2. The percentage which can be safely added varies with the gravity of the naphtha.

3. A 55° naphtha at ordinary room temperatures is practically free from explosion hazard, but in order to be reasonably safe from fire hazard it should contain at least 30 per cent. of carbon tetrachloride.

4. A 63° naphtha at ordinary room temperatures presents but slight explosion hazard, but in order to be reasonably safe from fire hazard it should contain at least 45 per cent. of carbon tetrachloride.

5. A 70° naphtha (motor gasolene) in order to be safe from explosion hazard should contain at least 50 per cent. of carbon tetrachloride, and to be reasonably safe from fire hazard should contain at least 60 per cent.

6. A 76° naphtha to be safe from explosion hazard should contain at least 60 per cent. of carbon tetrachloride and to be reasonably safe from fire hazard should contain 70 per cent.

The above statements apply, naturally, only to naphthas, which show approximately the same results on distillation,—especially with respect to the lower boiling fractions,—as those tested. The expression "reasonably safe from fire hazard" is used advisedly since the above mixtures, while possessing but little fire hazard in open containers, will burn if spread out over a considerable area on any other readily combustible material, such as cotton waste. The percentages of naphtha, stated in each case, are limiting ones and good practice would call for an additional 5 per cent. of carbon tetrachloride in order to allow some factor for safety.

Questions and Answers

Under this head we undertake to answer, free of charge, to the best of our ability, questions pertaining to textile matters received from any regular subscriber to the TEXTILE WORLD RECORD. Questions should be stated as briefly and concisely as possible. Inquiries pertaining to textile processes, machinery, improvements, methods of management, the markets, etc., are especially invited, as well as any legitimate discussion on the views expressed. All inquiries must be accompanied by the name of the person inquiring, not for publication, but as an evidence of good faith.

If the question is not of general interest to textile readers and involves expensive investigation, a charge covering the cost may be made, of which the inquirer will be advised before any expense is incurred.

REELING WORSTED YARN

Editor Textile World Record:

We are interested in finding out how worsted skein yarn is reeled in counts of 2/20s to 2/40s for the men's wear trade. Our reels are for 72-inch skeins, and we want to find out what width the skeins should be laid on the reels, and how many crossings or what fraction of a crossing of the traverse motion is generally employed. That is, whether it is a cam or a crank motion.

Hillsboro (1949).

A reader has applied for information on the reeling of worsted skein yarn, asking for details of how it is done for the men's wear trade. It may be better to consider how it ought to be done and why worsted weaving yarn is reeled in skeins at all. Some practice even at the present day suggests that these points have not had too much consideration by certain parties. Worsted is skeined in order that it may be dyed to level shades without trouble and it should be reeled in the manner which best permits good dyeing to be done. After dyeing the yarn needs rewinding and the original skeining, in a proper order of affairs, will be done with this further operation in view. The winder wants skeins which wind freely, with no superfluous dragging of thread upon thread, no avoidable breakages and no marked disarrangement of the surface fibers.

These desiderata are not attained by use of the plain reel, which lays the threads side by side throughout their length. Plain reeled yarn is well enough for samples which one may want to divide by hand and for finger-knitting, but is not such as a dyer would choose or as a winder would want. The dyer wants a firm, compact, handy hank which when unknotted opens out as flat as when it lay on the swift of the reeling machine, and this without the shaking and straightening required where plain winding is in use. The winder wants yarn that is good to wind and of which the end can immediately be found in case of breakage. These requirements are met to a greater or less extent by the use of the crossing or traversing motion upon the reel.

The yarn instead of being laid in parallel contact is laid by the lateral traverse of the thread-guide in a diamond pattern upon the reel. The points of parallel contact between thread and thread instead of being long are short, and the greater the traverse, the more pronounced the diagonal that is formed and the shorter are these touching points. The longer the traverse the flatter and wider is the skein, the less is the liability to grow matted and tangled in dyeing, and the greater the length which can be wound in one hank. In the case of silk skeined on the "Grant," or diamond, reel as much as 10,000 yards may be run continuously in one length. There exists in English practice a great variety of ties or leasings, and the work of tying in some cases takes longer than that of reeling. The instance may be given of worsted yarn required to be leased in sevens and reeled $4 \times 560 = 2{,}240$ yards in a hank. The operation took at least three times as long as the actual reeling.

The amount of traverse to allow is thus not a fixed quantity, but variable with the circumference of the swift, the counts and character of the yarn, the permissible length of hank and the fashion of leasing. The traverse in the modern types of English reel is adjustable by moving towards or away from the center a nut set in the slot of a revolving disc. More or less eccentric motion is imparted to the guide rod by a slotted

sliding arm or crank. Once set, the crossing movement is found in practice to serve for a considerable variety of counts. The traverse is a quick one, making three crosses in the course of one revolution of what is normally a 54-inch reel.

Cross-reeling in England is superceding plain reeling in all the worsted spinning mills in which any considerable bundle trade is done. This is not the case in all mills, because the trend for many years has been towards piece-dyed fabrics on the one hand and slubbing-dyed on the other. Yarn dyeing in worsted is of less account and its requirements have had less general attention, but it is observed by acute critics of yarn that much cross-reeled yarn is not crossed enough. In their view it is best in the end to allow a wide traverse, instead of a narrow or nominal one, and there are no reports of harm accruing from allowing too much. The dyeing, and to some extent the yarn itself, suffer from allowing too little, and a seller might fairly claim as a merit the fact that his yarn is wound in wide crossed skeins.

James Strand.

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STYLES IN SWEATER COATS

Editor Textile World Record:

Can you inform us as to what styles will prevail in sweater coats for men, women and children for the coming season? Hanson (1950).

The tendency in women's coats has gradually changed from the very fancy stitches to the plainer, more uniform stitches, and also to the plain sweater stitch, and in the better goods to the plain shaker knit. Few double breasted coats are being bought, the demand being principally for single breasted garments, and about two-thirds of them are bought with high collars. The high turnover collar is the most popular, but in some localities the military collars are being sold freely. There is some demand for double storm collars for high school girls. The prevailing length is one to come just over the hips. Fully one-half of the women's coats sold are white and the next in demand is grey. In this particular it is noticed that the very light greys are taken in place of the oxford.

In misses' coats the bulk of the business is being done on cardinal, and with military or Byron collars and on the plainer stitches.

Indications are that coat sweaters made with sailor collars will be good for late spring and early fall, and also during the summer at the seashore and mountains. There is some tendency toward longer coats for children. Infants' coats are taken mostly in all white, but there is some demand for combination of white with sky and white with pink. There is an increasing demand for infants' sets, consisting of coat sweater, legging drawers, cap and muff to match, and scarlet seems to be the better color. The demand for men's coats has developed into one for plain stitches entirely in oxford and maroon colors with a sprinkling of green and tan. Byron and storm are the prevailing collars, the Byron collar being fastened with large metal hooks and eyes.

Fillmore.

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PRINTED TAPE

Editor Textile World Record:

We are interested in a quantity of tape as per sample enclosed. If you can give us any information as to the manufacturers of this article, same will be appreciated. Plus (1945).

The tape of which a sample is enclosed with this inquiry, consisted of a number of cotton threads lying side by side and fastened together with some adhesive material, there being no filling or interlacing of the threads to form a fabric. The name of a firm was printed on the tape at short intervals. We referred the inquiry to our English correspondent and he replied as follows:

SAMPLE OF PRINTED TAPE

I have made inquiries regarding the tape of which you sent a sample and have satisfied myself that it is not manufactured in England. I learn that the origin is Austrian.

I am unable to find any British patent specifications regarding the process of manufacture and although one can form opinions of how the tape is made, it is not possible at this writing to give you any definite information. I enclose a price list with some samples, one of which is shown in the accompanying illustration, obtained from Joseph Rothschild & Co., 14 St. Dunstan's Hill, London, E. C., England, who sells the tape more cheaply than any one in this country.

Wessex.

Our French correspondent replies to this question as follows: The sample accompanying the letter is known as pasted ribbon. As its name indicates, this ribbon consists of a number of threads pasted together. I send herewith several samples representing various types of this class of goods of different widths and colors. A few of them are shown at Fig. 2. Some of these are corrugated, this effect being produced by passing the ribbon between fluted rollers. Fig. 3 shows the Dickerhoff machine used for the manufacture of pasted ribbons. The bobbins carrying the yarn are placed in a rack at the back of the machine. The yarn passes from the bobbins through a reed, which brings the threads in proper position side by side. They then pass through a solution of glue in the trough shown in the illustration. The ribbons are then passed over steam-heated drums, where they are rapidly dried, and from these drums are passed to a special winding device at the front of the machine.

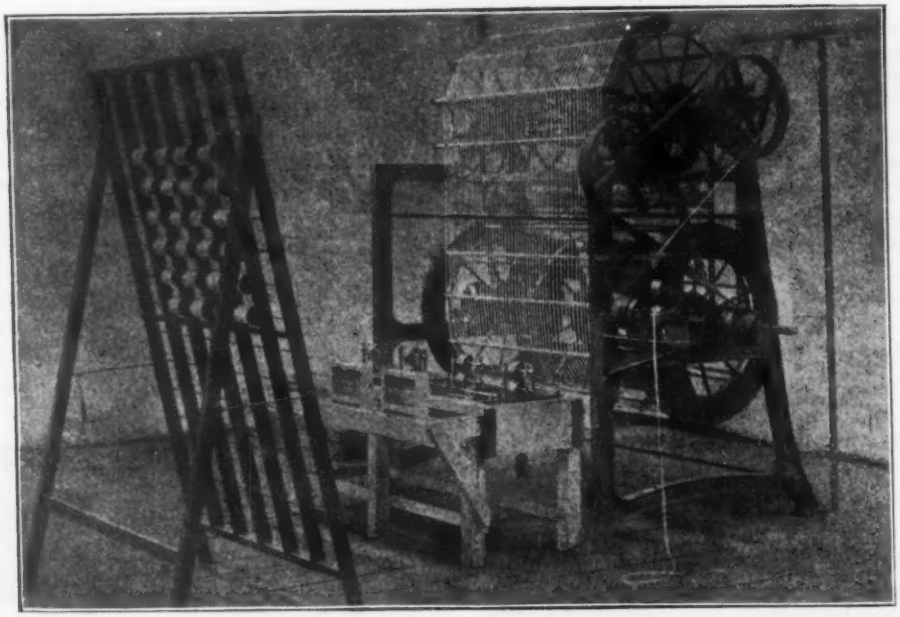

FIG. 3. THE DICKERHOFF MACHINE FOR MANUFACTURING PASTED RIBBONS

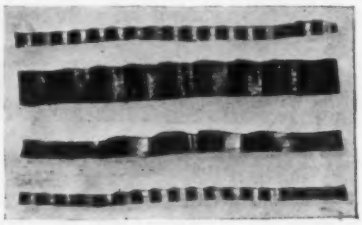

FIG. 2. SAMPLES OF PRINTED TAPE

The composition of the paste varies widely, the base being either gelatine or dextrine. The solution is heated by steam and the desired coloring material is added. Usu-

ally the ribbons are made of cotton yarn, sometimes of silk. They are made either plain, corrugated or printed, the last named being used in place of twine for tying up small parcels, and in such cases usually bearing the name of the dealer. These ribbons are also used for millinery, in which case they are twisted or braided. Gaul.

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MANUFACTURING MANGLE CLOTH

Editor Textile World Record:

I enclose sample of a felt cloth used in laundries and would like to have information regarding the machinery necessary for equipping a mill for the manufacture of this class of goods. Please give number and kind of machines and state the capacity in finished cloth.

Manufacturer (1946).

The machinery required for the manufacture of mangle cloth in a small mill is as follows:

1 picker.

2 sets of 60 by 60 cards. These sets should each consist of a breaker and finisher. The stock used for these goods requires very little carding and two cards will be as satisfactory as three. If using very greasy stock, the advantage of having only two cards to clean is quite a consideration. The feed rolls must be of exceptional size and strength as, on very greasy stock, it will be necessary to pass into the machine about 600 pounds a day to get the required production at the finisher. The ordinary feed rolls will sometimes bend sufficiently to let the stock draw in in bunches in the middle of the rolls. The rings on the finisher should not be narrower than 1 1/2 inches. 1 use 1 3/4 inch top and 2 inch bottom rings and found them satisfactory.

2 mules, about 140 spindles and 3-inch gauge of the heaviest type. Bobbins should be long, say 8 inches.

1 compression spooler.

1 warping machine and compression beamer.

4 looms 216 inches wide.

2 looms 186 inches wide. These looms should have split bean s.

It is advisable to have a slit in the floor in front of each loom for the cloth to pass through to the fulling room, as it would be very difficult to handle such large pieces if wound on a cloth beam in the usual way.

The finishing machinery required would be:

3 fulling mills of large size.

2 rolling teasel gigs 130 inches wide. The maintenance of these machines is quite an expense, and I should consider a double action napper might be an efficient substitute, but cannot speak from experience.

1 dryer 130 inches wide.

As regards production, each of the looms will produce three pieces a week, that is 18 pieces from the six looms. As many of the pieces will be split into two or three widths, and moreover are generally sold by the pound, it would be better to say that the production would be about 3,000 pounds of finished cloth. Cadiz.

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STAINS IN CLOTH

Editor Textile World Record:

I am sending you under separate cover two pieces of cloth on which you will find yellow stains. Can you give me any idea as to the causes and remedy for this trouble? The trouble is more apparent on goods that are well milled and is most noticeable on ends of pieces. These goods are finished in sets of four and five pieces. They are soaped in the fulling mill, where they run from two to five hours. In the washer they are given sufficient warm water to bring up a good rich lather and are run from 1 to 1 1/2 hours in soap and rinsed one hour or more. They are then bleached in a sulphur house. The stains are not seen until after the bleaching, but as the goods are quite yellow this is not surprising. The soap is made with 9.7 ozs. tallow soap, and 2.9 ozs. 28 per cent alkali to one gallon. This soap was lately increased from 8 ozs. soap and 2 ozs. alkali to overcome this trouble, and for several weeks it worked all right, but lately the stains have reappeared. I have tried several kinds of soap and different proportions, but have not succeeded in overcoming the difficulty, nor have I been able to remove the stains when once in the goods.

Fulton (1940).

The sample of cloth sent showing the stains has been carefully examined and found upon chemical analysis to be iron, consequently the soaps employed have nothing whatever to do with the defect. It is quite possible that the water used at this mill may contain iron which may have been thrown out of solution in the form of a deposit which has lodged somewhere and which has been wiped up by the cloth, or

else the cloth laid on some iron-soiled place while wet, and iron rust formed which was taken up by the goods.

The stains may be removed from the pieces by carefully treating them with dilute muriatic acid and afterwards giving them a thorough rinse with plenty of water, or by boiling them in a bath containing oxalic acid, afterwards rinsing thoroughly.

Beta Naphthol.

A WORSTED SPINNING AND DYEING PLANT

Editor Textile World Record:

We would like to know the approximate cost for the necessary machinery to spin 10,000 lbs. per week of worsted yarn, 2/14s to 2/30s crossbred quality, and whether the same machinery would be adapted to spin Botany stock in finer counts. What in your opinion would be the most modern plant to dye the production, either in top or yarn, so as to be able to make greys and mixtures and colors? Please give the approximate cost of such a plant. Weymouth (1947).

Without knowing a good many more particulars than are given, no serviceable statement of the cost of the yarn plant can be made. Is the wool long or short; are the yarns for knitting or weaving; is the Bradford system or the French system meant, and is the work to begin with the wool or with bought tops? These points mean differences of thousands of dollars in the cost.

The quantity of machinery required to spin 10,000 lbs. per week by the French system is given by the courtesy of Platt Bros. & Co., Ltd.

4,960 worsted spindles for 14s to 30s. Average 22s at 45 hanks per spindle = about 10,145 lbs. per week of 60 hours, crossbred or botany wools.

2 screw gill balling machines, 4 heads of 1 delivery.

1 1st drawing frame, 8 boxes, 8 bobbins, 450 m/m staff.

1 2d drawing frame, 8 boxes, 8 bobbins, 450 m/m staff.

1 3d drawing frame, 8 boxes, 8 bobbins, 450 m/m staff.

1 reducing frame, 9 boxes, 18 bobbins, 17 1/4 inch staff.

1 slubbing frame, 18 boxes, 36 bobbins, 17 1/4 inch staff.

1 intermediate frame, 27 boxes, 54 bobbins, 17 1/4 inch staff.

2 roving frames, 27 boxes, 54 bobbins, 17 1/4 inch staff.

8 x 620 self-acting worsted mules, 1 11/16 inch distance, 63 inch stretch.

8 x 216 Boyd's stop motion twisters, 3 1/4 inch distance, 2 1/4 inch rings.

To complete the equipment for botany spinning one or more passages of drawing to suit the count of yarn intended would be needful.

Supposing the Bradford system to be wanted, and assuming that the yarn is for hosiery purposes, it can be reckoned that one set of drawing machinery, followed by flyer spinning frames, would give a production of 4,000 lbs. a week and cost about $2,300 to $2,400 (in England). Frames fitted with Rabbeth-type spindles are quoted 14s. 6d. ($3.48) per spindle; fitted with the Arnold-Forster patent doffing motion they would cost 21s. ($5.04) per spindle. Frames of the latter sort are in great demand and are now being made under license by an Oldham firm as well as by the originators, Hall & Stells. Belting, bobbins, sliver cans and accessories might be expected to cost about one-third as much as the machinery. Twisting frames are not included in this rough estimate

The drawing machinery made for crossbred qualities is set too coarse for fine botany. More boxes are needed for fine wool, a set of smaller bobbins, double the number of roving spindles and extra reducing machinery. While there may be hosiery counts and botany wools that can be spun on machines built for crossbred, it cannot be suggested that it is at all advisable to set to work in that way. To deal satisfactorily with an inquiry of this sort, samples of the wool to be used and the yarns to be spun should be furnished.

It is impossible to reply to the second half of the question in a manner that would not call forth differences of opinion. Dyeing is largely a matter of personal skill and the machines he has used with most success seem best all-round to any given dyer. For treating blacks and colors, dealing with all sorts

of dyestuffs and with large lots as well as small, having regard to quality as well as quantity, a large number of dyers would recommend an outfit somewhat on the lines of the main details given below and would undertake to produce good work with it.

To dye 10,000 lbs. worsted slubbing or yarn per week:

1 boiler.

1 set economizers and fittings.

1 engine, 25 to 30 h. p.

1 Klauder-Weldon, capacity 650 lbs. crossbred slubbing, or 480 lbs. crossbred yarn.

4 pans, capacity 150 lbs. crossbred slubbing, or 120 lbs. crossbred yarn.

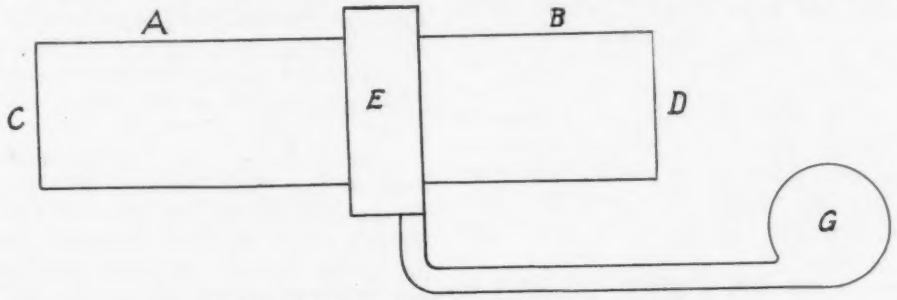


FIG. 1. MACHINE USED FOR DYEING TOPS IN THE BALL.

2 pans, capacity 70 lbs. crossbred slubbing, or 50 lbs. crossbred yarn.

1 chroming machine, capacity 400 lbs. crossbred slubbing.

1 hydro-extractor, 72 in.

1 drying machine (Kidderminster type).

With accessories the cost of this dyeing plant (apart from steam and power) would be some $6,000 in England. It is calculated to deal with:

15,000 lbs. slubbing (common acid black).

12,000 to 14,000 lbs. slubbing (diamond, P. V., alizarine or logwood black).

10,000 lbs. crossbred yarn (diamond black).

10,000 lbs. or over crossbred yarn (mixed black and colors).

The newest type of machine which has been brought to the attention of the color spinners and slubbing dyers in Yorkshire is the De Keukelaere. The machine is of the vacuum type, but differs from the Obermaier model in one point of detail. In the latter type of machine the dye liquor forced through the apertures in a relatively small perforated spindle has to penetrate a mass of an extended circumference. In the newer machine this necessity of dealing with a large mass from a small source is avoided. The perforated spindle is replaced by a chamber of the same diameter as that in which the material is stored and the liquor instead of traveling radially from a centre is pumped through in parallel lines. Fig. 1 illustrates the principle of the machine used for dyeing tops in the ball. It is built up of cylinders or cans, marked A and B of the same diameter as that of the balls used in the mill. Each can contains two balls of tops and has perforated ends, C and D. The liquor is driven by the pump, G, through the perforated sides of the middle chamber, E, and thus through the material. The cold water connection for washing off and the reserve tank attachment are omitted from the diagram. The complete machine consists of two to 20 such units as the one displayed. The balls of tops packed tightly in the cylinders are dyed with a minimum of disturbance of the fiber and with little water and therefore with little steam. For yarn a machine with a large cylinder, also with a middle chamber, is used, and copper stains are avoided by lining the machine with a thick cotton fabric. Wessex.

The question came from a Canadian manufacturer. The prices given by "Wessex" are those quoted by English builders, and would be subject to increases resulting from tariffs and transportation charges.

Knitting Department

THE KNIT GOODS SITUATION

The hand to mouth policy of buyers practiced during the initial buying season for heavy weights has been very forcibly brought to notice during the past month, and manufacturers have been fairly besieged for merchandise for immediate delivery. Several of the mills were shut down for a short time during the summer season and now find themselves unable to take care of the business that has come forward recently from buyers who failed to anticipate their wants in advance of the demand. This heavy call for knit underwear in fall weights is not confined to any particular lines, but is apparent in all, which shows that jobbing houses in general were backward in placing orders for their normal requirements and are only placing duplicate orders as their stocks become broken.

There is one line of goods that there is not quite so much scurrying about to get deliveries on, and that is women's 50 cent ribbed goods. It seems that buyers placed liberal orders on this class of goods. As there are a great many manufacturers making them, no shortage has been noted as yet, and prices have been reduced. Lines that were held early in the season at $3.62 1/2 are now being offered at $3.50, and those lines that were priced early at $3.75 are now to be had at $3.62 1/2.

On the lower grades of ladies' ribbed vests and pants, there have been concessions made for additional business, and 6 pound carded goods have been sold at $1.90; 7 pound, at $2.10; and 7 pound extra sizes, at $2.15. These new prices made by the few mills who are now in a position to make this class of goods have called forth fairly large orders, so that at this writing the manufacturers are very busy and behind on delivery.

Carded yarn combination suits for women have been reduced from $3.75 to $3.62 1/2. Although there is little change in the price of combed yarns, suits that were sold early at $7.00 and $7.25 are being offered as low as $6.50 and $6.75.

We have not learned of any lower quotations being made on children's goods to any extent, and in going over the matter with several manufacturers who make children's lines, it does not seem as if any lower prices will be made for some time to come, as these manufacturers have plenty of orders and are every day receiving urgent communications and telegrams asking for quick deliveries. Although raw material conditions might warrant lower figures being named, the question of supply and demand will undoubtedly cause a maintenance of present prices for some time.

Some lines of men's fleeced shirts and drawers have been reduced from 7 1/2 to 12 1/2 cents per dozen since our last issue. No concessions are made on some of the better known lines of standard weight goods and deliveries are not promised under three to four weeks by some makers.

Wool lines are generally held at the same prices throughout the year, but manufacturers are changing their proportions or bettering their production in some way to make up the difference in prices of materials.

Manufacturers' agents have been giving considerable attention to the lines for fall of 1912, but we cannot learn of any quotations having been made or orders placed as yet.

There has been some canvassing on the part of manufacturers to ascertain the buyers' wishes in regard to women's 50 cent ribbed goods, as to whether it would be advisable to increase the weight to 8 pounds or reduce the price for 1912. So far it seems to be the opinion that it would be more advisable to increase the weight.

Business on spring lines has not measured up to any of the more recent years and at this writing there are many manufacturers of light weights who are somewhat alarmed at the prospects before them. Buyers have placed orders very gingerly so far. Al-

though some manufacturers of women's shaped goods have been round the market and reduced their prices from which early orders were placed at, we cannot learn that it has caused any material increase in these orders. The buyers seem determined to keep their purchases down and are evidently figuring on getting duplicates when the season opens. This will probably lead to a repetition of the condition that now exists in the heavy end, where the manufacturers are unable to make satisfactory deliveries of all the orders tendered them. Of course, some of this action on the part of buyers is justifiable to an extent, on account of the uncertainty existing in the raw material markets; nevertheless, it would be better for all concerned if buyers would more fully anticipate their season's requirements, so as to give manufacturers an opportunity to produce the goods.

It is understood that the well-known R. A. Knitting Co. of Hagerstown, Md., making women's shaped goods in cotton and lisle, have recently notified their customers of a reduction of 5 cents per dozen on all their cotton goods and 12 1/2 cents per dozen on all lisles, notwithstanding the fact that many of these goods were already made and in the warehouse, awaiting dates of shipment.

All kinds of predictions are being made as to the coming cotton crop. It is reported that one mill man who has just returned from a trip through the cotton belt, states he would not be surprised if the crop would amount to fifteen million bales, in which event lower prices than now exist will be made. There are many who predict 8-cent cotton, but the majority of the interested factors express themselves as of the opinion that the low mark will be in the neighborhood of 9 cents.

Among the new garments shown for spring is a woman's combination suit made by the Richelieu Knitting Co. This is called the new three piece garment and is so constructed as to have nearly double the width round the hips, as through the bust. These are made in various grades to retail at 50 cents to $2.00 a garment. It is claimed that the trade are buying the garment freely in place of the ordinary shaped garment so long in use.

HOSIERY

The steady business on hosiery noted in last month's issue has continued unabated throughout October. As prices are being maintained generally, hosiery manufacturers as a rule appear well satisfied with conditions.

Duplicate orders for cashmere hose have come in quite freely and from one manufacturer of this class of goods we learn that business on merinos and cashmeres is much better this year than for several seasons. He gave it as his opinion that the demand for this class of goods is being helped by the increasing tendency on the part of women to spend more time out of doors in such sports as camping, golfing, motoring, etc.

The past month has witnessed a slight falling off in the demand for silk hosiery. While very large orders have been placed for spring for silks at all prices, the demand for the present has shifted somewhat to lisles and mercerized goods.

Jobbers who have been soliciting spring business report that retailers generally have placed their orders in about the usual volume, but that they have bought silks at the expense of mercerized and lisle goods, and that the orders for medium and light weight cottons are about the same as usual.

There has been a large business placed on silk stockings to retail at 25 cents per pair. These are made with about 11 to 12 inches of silk and the balance of the leg is made of cotton about the quality of a 12 1/2 cent stocking. Manufacturers' prices on these lines have ranged from $1.85 to $1.95. The next price on silk goods has been $2.65 to $2.75, which get to the retailers for 35-cent lines. These are about the same quality as the 25-cent numbers, but with longer silk boots. The 50-cent grades have a cotton welt about four to five inches wide with heel, toe and sole made of cotton or lisle.

From the orders placed by retailers thus far, it is noticed that plain colored lisles and cottons are almost entirely ignored, only plain colored silks being selected. Laces are given very little consideration and embroid-

ered hose are practically dead, except in high grade silks. Tans are bought in goodly quantity in all grades of cotton, lisle and silk and there is also a heavy demand for white for spring, especially in the very light weights.

In children's hosiery, blacks are bought principally, with tan or white running about equally. In the smaller sizes a few pinks and blues are taken. Infants' socks are selling very freely; a very sightly line of white with fancy plaid tops and seamless feet may be had at about $1.00 per dozen. In the better grades importers are showing a wide range of fancy plaid and figured tops, mostly on white grounds, but with a few tans and navy to make up an assortment.

DEFECTS IN KNIT CLOTH

BY HOOSIER

The chief trouble in knitting usually consists of holes in the cloth, which arise from various causes. This trouble is so common that the remedies are fairly well known and I will, therefore, deal more particularly with the minor defects occurring on circular latch needle machines, some of which often pass inspection. Carded yarn often contains thick spots, thin places, lumps of dirt, lint, badly and tied knots. These cause more or less press-offs and smashes, in repairing which the broken needles must be replaced. There often remain slightly damaged needles which are overlooked, causing small imperfections, which frequently grow worse. One of these imperfections is a wide wale which shows most conspicuously where the cloth is stretched out before it reaches the take-up rolls. The power for operating the dial needles is transmitted by means of lugs from the cylinder to the dial through the cloth. These lugs frequently leave marks on the cloth. This is an unavoidable evil with which every operator quickly becomes familiar.

An irregular wale is a different matter and should be remedied. Often the cause is found to be a cylinder needle which is bent a little to one side below the rivet. If the bend is below the slot for the latch, it can easily be straightened with a pair of pliers, but if the bend injures the slot at all, the safest way is to throw the needle out. If the cylinder needles do not seem to be at fault, the next dial needle should be examined. The hook may be bent slightly higher than the rest and can often be straightened, or if it is found to be straight when removed, there may be a bit of lint or dirt in the slot.

In mills where dial needles of the same gauge are used, but with hooks of different sizes, a needle with a large hook is some-

FIG. 1.

times used instead of one with a small hook. If none of these causes exist, turn back to the cylinder needles, and remove four or five at the point where the trouble seems to be and examine the stems and shanks. Very likely one may be bent, preventing the needle from sliding freely in the slot.

Another imperfection is generally called "bird-eye." These may run vertically or horizontally or both ways as in Fig. 1. Bird-eyes which follow a wale are often caused by a dial needle which either has the hook opened too much or the latch bent to one side. In either case the needle does not cast the stitch off properly every time. If the bird-eyes follow the feed horizontally around the cloth, it generally indicates that one of the dial cams is out of order. If a draw cam is set too lightly or a tucking cam doesn't throw the needles out far enough, a proper

adjustment of the misplaced cam will quickly end the trouble.

When the bird-eyes appear to follow the marks of the cylinder lugs it is an indication that the take-up is not working properly. By watching the machine for a few minutes one can generally see if this is the case. With machines which use a weight take-up the belt may have become stretched a little, or the accumulated cloth may interfere with the action of the rolls. One of the lugs may need adjustment, but this seldom occurs, as these parts generally stay where they are put, yet in many cases they are blamed for trouble that arises from other sources.

When bird-eyes are scattered all over the cloth it is an indication that the dial cams are at fault. Some of the stitch changing mechanism may have become displaced, throwing the tucking cams in just far enough to make occasional bad stitches, or it may be that the yarn on the machine has been changed from a fine to a coarser number, in which case the dial draw cams should be changed if there is much difference between the two sizes of yarn. A similar trouble is caused by a cylinder needle latch being slightly bent or broken, preventing the stitch from casting off properly. This trouble varies in degree, frequently getting so bad as to result in the cutting of holes or even tearing of a slit in the cloth, unless the machine is promptly repaired.

Some time when examining the cloth, the light strikes it so as to show a wale made by a cylinder needle, causing a noticeably fuzzy appearance. This is caused by a loose rivet in the needle. The ends of the rivet catch the yarn just enough to roughen it a little. Frequently the defect often is not noticed and generally does little damage at first, but gradually gets worse until holes are cut, sometimes several feet apart at first, and the novice is unable to find any cause for them. The only safe way is to remove the defective needles as soon as detected, and break them to prevent any chance of using them again by mistake.

A very annoying defect is shown at Fig. 2. The stripes or unevenness is liable to arise from more than one cause. The first supposition may be that the yarn is not evenly spun, and this may or may not be the case. All the yarn should be removed from the machine and replaced with yarn which is known to be all right. If the cloth then comes down smooth and even we have good grounds for finding fault with the spinner. If the trouble continues, the machine must be at fault and the next thing to do is to

FIG. 2.

"even up the ends." A slight mark is made with colored crayon or soiled fingers on each end of yarn opposite some uniform part of the stop-motion. The machine is then slowly turned until these marks come opposite some other part of the stop-motion as near the feeders as possible. If the marks keep close together the cylinder draw-cams are set uniformly. If some of the marks gain on the others the corresponding cam should be raised till all draw alike. In case the trouble does not lie with the cylinder draw-cams, the dial draw-cams may be uneven. The stitches should be examined as they are cast off by the dial needles and see that all the cams draw the same. There is no satis-

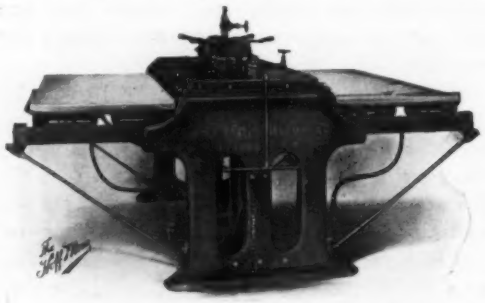
factory proof of this except that given by the appearance of the cloth.

When knitting two sizes of yarn nearly alike in count, machine tenders are apt to get the numbers misplaced and thus produce uneven cloth. In all the cases mentioned, reference has been made to plain (one and one) stitch cloth, as it is generally understood that any defect is more or less covered by tuck stitches, hence the old knitting rule: "Get the plain stitch right and the tuck will give no trouble."

THE "HOFF-MAN" TWIN PRESS FOR KNIT GOODS

The illustration shows the improved "Hoff-man" twin steam buck press for hosiery and underwear, built by the United States Hoffman Co., Syracuse, N. Y. The single press built by this company is in operation in a large number of mills. Recently there was a call on the builders for a double press. This double machine was so satisfactory to knit goods manufacturers after thorough investigation, that the company decided to make it one of their regular products. The double press is known as 3-F. It not only has a double pressing surface, but combines two distinct types of presses in one machine, a hot press and a direct steam contact press. The head and buck of the Hoffman double press are both heated by steam so that when under pressure the garments are heated from both sides. The two bucks slide alternately under the head and directly over the steam operated piston by means of which the pressure is obtained. The press is in constant operation. While one set of garments is being pressed the buck is being loaded with another set.

Another advantage is that the press can be operated either with a full set or with a single garment, thus making it unnecessary to keep the press idle while waiting for garments to fill it. An operator works on each side of the machine. While one girl is pressing the other is placing garments on the idle buck. The two bucks have a combined pressing surface of 30 square feet. The number of garments that each will accommodate depends, of course, upon whether they are folded or pressed flat. The garments may be pressed full length or folded as they are to be boxed. Press boards are not needed, so that folded garments need not be rehandled, but are ready for packing when coming from the press. The goods are inspected at the time of pressing. There are no broken buttons with this press. The builders state that the double Hoffman press with two girls to operate it will turn out from



THE "HOFF-MANN" TWIN PRESS FOR KNIT GOODS

200 to 1,000 dozen garments daily, the quantity depending upon the method of handling. The machine is adapted to the pressing of hosiery and fleece lined light or heavy ribbed underwear, union suits and sweaters, of either wool, cotton or silk.

There is no complicated mechanism to get out of order or any rapidly moving parts to cause the machine to wear out quickly. There are no wheels, worm gears, cogs or gear drives, consequently, there is no necessity for the frequent use of lubricants which often cause damage to the garments. The Hoffman press does not require extra apparatus. It is set in place and connected with two steam pipes, one a feed pipe and the other an exhaust. It is then ready for operation. When operating as a direct steam buck press the steam is applied direct to the garment by opening a valve at the head of the machine in front of the operator. This direct steam is not used when the machine is being operated as a hot press only.

Further information can be obtained upon application to the builders.

KNITTING MACHINE FOR ZIGZAG PATTERNS

An improvement in flat knitting machines, invented in Switzerland and recently patented in this country, is intended for the production of zigzag patterns. Heretofore it has been possible to produce zigzag patterns in cardigan fabric only with the single cam knitting machine, because the needle bed has to be shifted after each row of meshes. As, however, single cam machines cannot be used for the production of a plaited cardigan fabric, zigzag patterns could not be formed in plaited fabrics. It is, of course, possible to produce plaited fabrics on the single cam knitting machines, but on the other hand it is not possible with machines of this class to shift the needle bed after each row of meshes, that is, to produce what is called shogged or racked work, because two rows of meshes are produced in one operation of the carriage and the second row of meshes begins before the first is finished, and it is impossible to shift the needle bed between the formation of the two rows. Hitherto it has not been possible to produce plaited cardigan fabrics with shogged or racked work. The present invention enables plaited cardigan fabrics with shogged or racked work to be produced. The knitting machine permits the production of such patterns by the operation of two single needle cams arranged at an interval from each other. When one of the cams leaves the row of needles the needle bed is shifted and when this has taken place the other needle cam enters the row of needles.

Fig. 1 is a side elevation of the machine. Figs. 2, 3 and 4 are plain views showing the carriage in different positions. Fig. 5 is an end view of the machine. Fig. 6 shows the cams. Figs. 7 and 8 illustrate the zigzag material knit on this machine. When the shaft rotates, its movement is transferred to the sprocket chain, which causes a reciprocating movement of the carriages. Assuming the carriages and the thread guides to be on the right hand side of the machine, as shown in Fig. 3, and that the front thread guide supplies white thread and the rear thread guide supplies black thread, then when the carriages move from right to left the driver bolt strikes the inner straight bearing face of the thread guide with its straight bearing face and carries this guide in front of it, bringing the white thread into the operative row of needles.

FIG. 1.

FIG. 2.

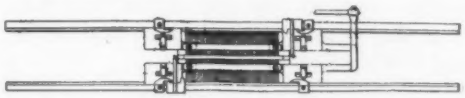


FIG. 3.

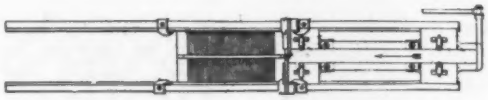


FIG. 4.

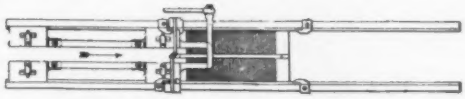
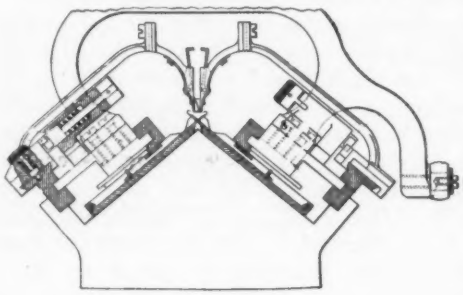


FIG. 5.



At first the rear thread guide does not participate in this movement, because the outwardly directed inclined engaging face of the driver bolt slides over the thread guide. As soon, however, as the driver bolt of the carriage encounters the bearing face of the

thread guide with its straight bearing face, the rear thread guide is also displaced by the carriage and black thread placed in the operative row of needles. The needle cam of the carriage is so arranged that in the movement from right to left the white thread of the front thread guide is knit by the rear row of needles and the thread is merely caught by the front row of needles; a row of white meshes is therefore formed on the rear. The needle cam of the carriage then knits the black thread of the rear thread guide on to the front row of needles, while the rear row of needles only catches the thread; accordingly at this time a row of black meshes is formed in front.

The black thread is always knitted in front and the white thread always in the rear so that the material produced is plaited, the black threads forming the front, and the white threads the back of the material, although of course any desired colors may be used.

In order to impart a zigzag form to the edges, the needle beds must be shifted after each row of meshes has been formed. The two needle cams are arranged some distance apart, the space being greater than the length of the needle bed, as obviously the shifting can take place only in that position of the carriages in which neither of the needle cams is in engagement with the rows

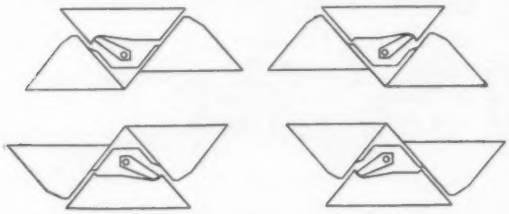


FIG. 6.

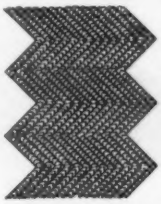


FIG. 7.

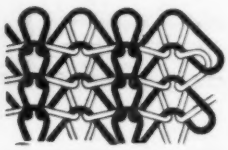


FIG 8.

When the carriages move from left to right, Fig. 4, the front thread guide with its white thread is again carried along by the carriage, causing the thread bearing face of the thread guide, and white thread is then used in the knitting. The rear thread guide with the black thread is carried along by the carriage as the inclined engaging face of the driver bolt passes over the thread guide and the straight bearing face of the driver bolt encounters the bearing face of the thread guide. The needle cam of the carriage, Fig. 4, is so arranged that in the movement from left to right the white thread of the front thread guide is knitted on to the rear row of needles and is caught only on the front row of needles, so that a row of white meshes is again formed on the rear. The needle cam of the carriage knits the black thread of the rear thread guide on to the front row of needles while the rear row of needles only catches the thread; accordingly a course of black meshes is again formed in front. The movement of the thread guides is limited by four stops as shown.

of needles. When the carriages are in the right hand end position, as shown in Fig. 3, the needle bed should be shifted. When the carriages reach the position shown in Fig. 2, the carriage has knit off a row of meshes, whereupon the needle bed should be again shifted. After the carriages have reached the left hand end position, as shown in Fig. 4, the carriage has again knit a row of meshes, whereupon the needle bed is again shifted. When the carriages reach the position shown in Fig. 2 another row of meshes has been knit, whereupon the needle bed is again shifted, this operation being continued indefinitely. The needle bed is shifted one needle to the left after a row of meshes has been knit and one needle to the right after the next row has been knit. When a given number of the staggered rows of meshes have been knit, the needle bed is operated once without shifting. By the operation described, plaited cardigan fabric with zigzag patterns staggered in single rows are produced.

A CIRCULAR RIB KNITTING MACHINE

The illustrations show an improved circular rib knitting machine recently patented in this country.

The improvements relate to cylinder knitting machines in which independently movable needles and independently movable sinkers are employed. Improvements are made in the sinker beds and method of actuating the sinkers. The needle cylinder, sinker bed and a series of needle head supports are consolidated in one structure, the sinker bed, sinkers and needle head supports being mounted on and carried by the needle cylinder.

As knitting machines of this type have heretofore been constructed, the annular sinker beds have been mounted and adapted to revolve upon their own track and to be driven independently of the needle cylinders so that a separate driving gear became necessary and the friction resulting from driving over its own track required more power. Furthermore, a high degree of skill and great accuracy became necessary in constructing machines after the old plan to secure perfect registration of the grooving of the sinker bed and the cylinder with which it cooperated so that the sinkers should in sinking the loops enter accurately between the needles of the cylinder to which the feed thread was being delivered.

Among the objects of this improved construction is a lighter and simpler machine which runs much easier and more accurately due to the fact that the old sinker bed track with its attendant friction and driving gears is dispensed with as a result of attaching it to or mounting it upon the needle cylinder. The cylinder and sinker bed are mutually adapted to each other so that when the two parts are adjusted to accurate registration, they are permanently fastened together, thus

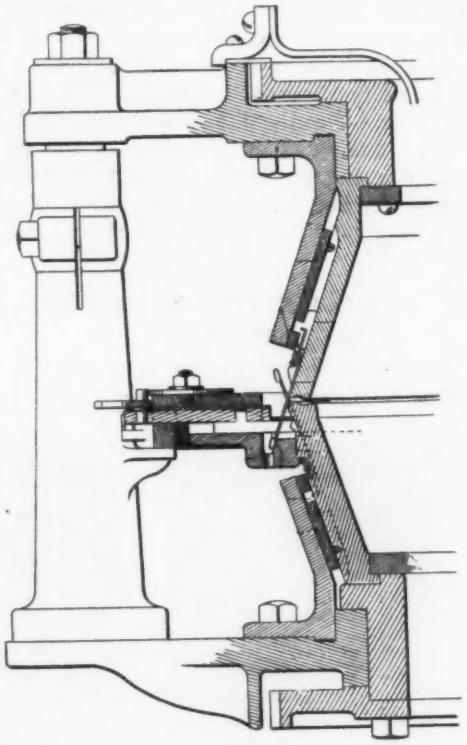


FIG. 1.

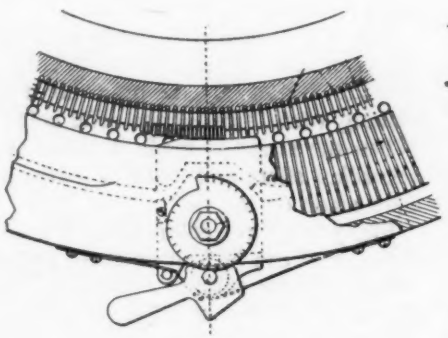
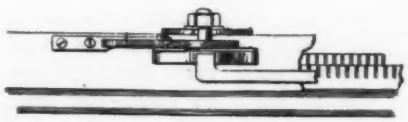


FIG. 2

FIG. 3



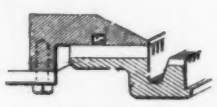


FIG. 4

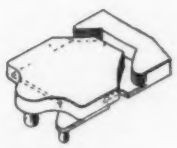


FIG. 5

preventing any subsequent derangement. By so consolidating these members they may be made very light, thereby contributing to a much higher rate of speed.

Fig. 1 shows a section through the cylinder of the improved machine. Fig. 2 is a plan view showing the sinker actuating devices. Fig. 3 is an elevation of the parts shown in Fig. 2. Fig. 4 is a section through the sinker bed and sinker cam plate. Fig. 5 is a view of the slur-cock and sinker guard.

ACCORDION KNITTED NECKTIES

BY LARAMIE

Accordion knitted neckwear was first produced on German flat machines having two sets of needles, one set for each color, such as black and white, green and red, etc. These ties commanded very good prices. The work was all done by hand, one machine producing only 18 to 36 ties a day, the production depending on whether the machines were making plain or striped ties and how difficult the stripes were to make. The prices ranged from $2 up. All these ties had to be seamed up the back the same as full fashioned hosiery.

In the course of time a circular machine was invented to produce the ties without the seam. They are made on 100 or more needles to a cylinder, having a short butt needle alternating with a long butt needle, and a two section cam on one feed. In making a plain necktie such as is shown at Fig. 1, it is necessary to use a black silk on one feed with the ordinary cams, and on the other feed a white silk which passes to the high butt needles, the short butt needles remaining just below the sinkers and casting off only on one feed. In this way the changeable effect is produced.

An attractive effect is produced by knitting the tie as at Fig. 1, except that every two inches the inside color comes out and the other color goes in. This is called a Roman stripe and consists of skeins of yarn dyed five or six colors each for about 12 inches. When it is running as a stripe in a necktie all the colors show up for the required number of revolutions.

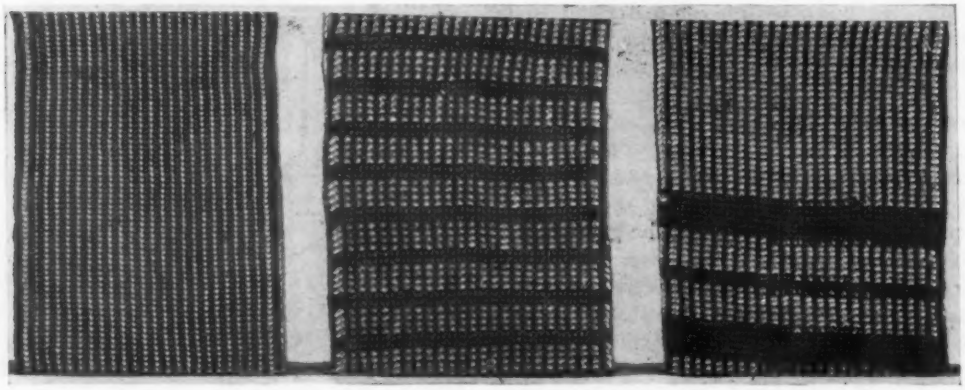


FIG. 1. FIG. 2. FIG. 3.

Fig. 2 is a striped tie made with only two colors of silk. When the inside color, which is white, comes out, the other color goes in, making what is called the solid color stripe. When the stripe is made it takes away the accordian effect and looks as if two patterns were made on the tie.

Fig. 3 is a three colored tie. Three colors are all that can be knit on these circular machines. Three colored effects are produced in a large number of different combinations.

In 1909 cotton yarn was exported from Japan to the extent of 46,228 tons, valued at $15,834,840.

Dyeing, Bleaching, Finishing, Etc.

SULPHUR COLORS ON COTTON

By LOUIS J. MATOS, Chemical Engineer

The introduction and commercial development of the so-called sulphur colors marked an epoch in the dyeing of cotton that was far-reaching beyond the wildest expectations of the distinguished chemists who discovered the extremely simple chemical reaction that gave to the industry its greatest impetus. Little did Croissant and Bretoniere in 1873 dream that by the fusion of organic bodies with sulphide of sodium they would inaugurate a line of chemical work that is still being vigorously prosecuted, and which in the intervening years would bring forth a range of colors for cotton that is of the utmost utility for almost every class of fabrics that cotton is used for.

It would be out of place in the present article to review the important stages in the development of this important group of dyes, but reference to the patent literature will convince any one that the chemists have not been idle and that every idea has been turned to its fullest use. The purpose of the present article is to direct attention to the latest and most approved methods of applying the sulphur colors to cotton and, if possible, point the way to more economical and effective methods of dyeing.

In the first place, we will consider only cotton dyehouses without any reference to mills or location, and will take up the various operations in regular order as applied to raw cotton, skein yarn, warps and piece goods. The equipment of a dyehouse for any particular line of work is a matter of some concern, and its planning should always be considered seriously and deliberately for the reason that it is rather more costly to rectify mistakes after the machinery is installed than to attend to all details before, and when supplementary costs are involved, the changes are seldom made.

In laying out a dyehouse for raw cotton to be dyed with sulphur colors, my preference is for dyeing machines of the pack system, of which there are a number of makes now on the market. The advantage of such dyeing apparatus is that they handle a maximum of raw stock with a minimum of dye liquor, and that when the dyehouse is in full swing and every man "on the job," there are no delays and the shades come out regular. A well laid out dyehouse means that the forwarding of the cotton is regular and in one direction, and that every convenience looking to facilitating operations is at hand. It means that the floors are good and sound, that proper drains are located and connected, that the water and steam supply is ample, and that the dyehouse is well ventilated and lighted. It is above all the greatest mistake to curtail light and ventilation in such places. In large dyehouses, proper runways and trucks should be provided for prompt handling of the dyed material, and the dryers should be of sufficient size to dry effectively the maximum amount of dyed cotton delivered to the dry room. It is a great mistake in ordering drying machines to purchase such whose rated capacity is just sufficient to take care of the wet material with no drying capacity to spare.

For dyeing standard shades, whether blacks, dark blues, tans, reds or mode shades, the dyer when once he has his formula established on the basis of so many ounces of color per gallon of water, has but little to do, as he is almost certain that his shade will come up right.

In dyeing raw cotton in pack machines, the most important point to take care of is to pack the cotton tight and evenly, as this will ensure an even flow of hot dye liquor through the entire mass, thereby ensuring level shades. If the packing is not good, uneven dyeings will always result.

Efficiency of machine dyeing with the sulphur colors always results in fuller shades

for the same percentage of color, due to a smaller volume of liquor being used, the other result being a more complete exhaustion of the dye liquor, which in a number of instances may be run off directly after dyeing, although if blacks or other heavy shades are being dyed, it is economical to pump the spent dye liquor immediately to the storage tank, and fortify it with further quantities of dyestuff, sodium sulphide and salt. The sulphur dyestuffs, particularly blacks, come on the market in very high degrees of concentration, which make it all the more important that the dyer should weigh with care the quantities that are required for dyeing, or to make use of stock solutions which are much more convenient. In many well organized dyehouses using sulphur colors, iron tanks are so placed that it is both convenient to add the dyestuff and other chemicals, and also to draw off the liquor as wanted. A return pipe from the pump of the dyeing machine leads to the dye storage tank. These are mere details, but they greatly facilitate the work and tend to a larger output.

The machines and pipes should be completely of iron, no copper, bronze or brass can form any part on account of the reaction between copper and the dyestuff. The machines should also be equipped with a positive acting suction pump as it is found best in practice to cause the liquors to be removed by suction than by pressure on account of the oxidizing influence of air under compression.

No special preparation of raw cotton is necessary for dyeing, but after the cotton has been packed in the machine, water can be allowed to circulate for some minutes in order that the entire mass may become thoroughly saturated before the dye liquor is forced through. The preliminary wetting may be done with water containing either soda ash or some soluble oil. Having charged the machine with cotton, the contents being wet or dry, the dye liquor is allowed to flow in on the top or through a side inlet, when the pump is started, the inflow of liquor continuing until the surface of the bath is above the top level of the cotton, and circulating freely. The temperature of the circulating dye liquor should be kept at 200° to 210° F., and for one hour.

The regulation of the dye bath for raw cotton is not difficult, but it does require care to get it started right. Take the case of the blacks of the immedial series of sulphur colors, 1 pound of color requires for its solution from 3/4 to 1 pound of sodium sulphide crystals, while the concentrated types of the same series require from 1 to 1 1/4 pounds. The amount of common salt necessary for the effective dyeing of blacks may be such as to give a density of 8° to 12° Tw., but it is very common practice, however, to run the density up to 18° Tw.

After dyeing, the spent liquor is removed, and the machine filled with water, the pump circulating it for several minutes when it is removed and some of it used to bring up the original volume of dye liquor, thus saving some color. Several changes of water are necessary, after which the cotton is removed, whizzed and dried. The subsequent treatment of the black dyed cotton is a matter of importance, depending upon the use to which it is to be put, but as a general rule, the cotton is either given a light soaping or is rinsed finally with water containing from 3/8 to 3/4 ounce of sodium acetate per gallon.

The following formula from practice will illustrate the quantities of color and chemicals requisite for the production of good blacks:

1.—BLACK ON 500 LBS. RAW COTTON.

Volume of Dye Bath, 500 Gallons

	Starting Bath	Standing Bath
Color	56 lbs.	40 lbs.
Sodium Sulphide (Crystals)	70 "	50 "
Soda Ash	17 "	8½ "
Common Salt	112 "	28 "

Dyeing continued for 10 minutes boiling, steam, then shut off, and dyeing continuing for 3/4 hour, finally washed and dried. Every 15 minutes the flow of liquor is reversed.

2.—BLACK ON 400 LBS. RAW COTTON.

Volume of Dye Bath, 360 Gallons

	Starting Bath	Standing Bath
Color	55 lbs.	34 lbs.
Sodium Sulphide (Crystals)	75 "	45 "
Soda Ash	15 "	3¾ "
Common Salt	90 "	30 "

The dye liquor is at once pumped through the dry cotton and boiling continued for 1/4 hour, after which it is circulated for 3/4 hour without further steam. The liquor is then pumped off, water run in along with 4 1/2 lbs. of sodium sulphide, and circulation continued for 10 minutes and then run off. The cotton is rinsed for 10 minutes at 120° F., and afterwards a constant flow allowed to run for 20 minutes. This gave a bleach that possessed superior fastness to washing and milling. This treatment is necessary for fast sulphur colors, especially blacks.

Machines used for raw stock dyeing may be used also for dyeing cotton in other forms, such as skeins and warps, and while the dyeing of these is to be treated in a further article, their dyeing in pack machines is deemed of interest. A regular dyeing is recorded from practice as follows:

3.—BLACK ON 170 LBS. COTTON WARPS.

2/40's—580 ends. 11,000 yards.
Volume of Dye Bath, 185 Gallons

	Starting Bath	Second Bath	Standing Bath
Color	36 lbs.	15 lbs., 3 ozs	13 lbs., 9 ozs.
Sodium Sulphide (Crystals)	60 "	23 lbs.	20 lbs.
Soda Ash	8 "	2 "	——
Common Salt	60 "	——	——

Dyeing of warps in the pack machine with sulphur colors is not desirable, but in this case it is a necessity, but it completely demonstrates the feasibility of the scheme. The proper way for warp dyeing is on the beam, and this will be described later. Blues, browns and mode shades are dyed on raw cotton with the same facility as blacks, but the important point to keep in mind is to bring up the proper shade by a sufficient amount of color aided by common salt, and where it is desired to impart particular fastness, to subject the dyed cotton to an after-treatment with either sulphate of copper or bichrome or both. The use of chrome is more common as it fixes the color completely and with but slight if any alteration of shade; as a rule 3 per cent. of chrome and 3 per cent. of acetic acid give very good results.

Sodium sulphide, the most important chemical used in dyeing with the sulphur colors comes either in drums filled solid with the fused substance, or else in crystals. It is of a dark brownish-olive color, and contains various impurities, and it should be dissolved and allowed to settle before being used. While it is cheap, it is desirable that it should be used as pure as possible. Any sediment present is liable to impair the clearness of the dyeing, besides having a marked influence on the spinning qualities of the raw cotton dyed with it. The writer prefers to use common salt instead of Glauber's salt in dyeing with the sulphur colors. Pound for pound it seems to have the tendency of forcing more color on the cotton. With commercial Glauber's salt there is always a possibility of slight traces of free acids present which is not desirable.

SCOURING CLOTH CLEAN

BY HAVELOCK

There is hardly any difficulty connected with the finishing of woolen goods that is more annoying to the finisher or damaging to the reputation of the mill than that of dirty goods. It is not alone that the goods are greasy that is annoying, but upon the cleanliness of the cloth depends the perfection of the work in the dry finishing department. Goods containing a residue of grease, dirt or soap cannot be properly gigged or sheared, and the finished appearance cannot be the best, to say nothing of the odor that readily condemns them after they have been cased up for a time.

Almost the worst thing that can happen in a woolen mill is to have trouble of this kind without the finisher being aware of it. This sometimes occurs, and the finisher spends his time in trying to correct the difficulty in the gigging or shearing, where it first manifests itself, without dreaming that the real cause may be in the make-up of his soap or in the treatment of the goods in the wet finishing department. The writer recalls two cases that came under his observation, where the cause of the trouble was differently placed, and the attempted corrections led to more serious difficulties.

In the first of these cases the finisher had had considerable experience as a dry fin-

isher, and was an excellent shear fixer, which the mill was greatly in need of at the time he was employed. He very readily got them out of their shear difficulty, but was not able to cope with the one that followed. When it first showed itself at the shear by reason of the difficulty in shearing the middle of the cloth the same as the sides, the latter seeming to shear easier, and clear up better, he began to look over his shear to discover the cause. Not being able to discover anything wrong with this machine, he concluded that the middle of the cloth was not cleared up in gigging as well as the sides, and so would not brush up and shear as well. This conclusion was correct, but the first cause was the dirt remaining in the midde of the cloth, which made it difficult for the teasels to raise the fibers. It is usually the case, where the cloth is not clean, that the sides are the cleanest, on account of their being more exposed in the washing. In this case the finisher endeavored to force the gigging in the middle of the cloth, by winding the rolls on the gig so as to press this part of the cloth harder against the teasels. The teasels failed to do the work, while they were all the time working upon the sides of the cloth.

Failing in his attempts at the gig, he turned his attention to the shear and did a most unusual thing. He took two sheets of smooth paper and laid one over the cloth at each side, which kept the shear cylinder from coming in contact with the cloth at these points, and had a girl at each side to hold the paper while he lowered the blades to shear the middle of the cloth closer, the paper serving to protect the sides from being sheared too much or becoming tender.

The writer was called to correct the trouble. After seeing that the fault was in the wet finishing, I made suitable changes in the soap and the procedure in fulling and scouring. Then when the first set of pieces came to the gigs, I removed all the strips of cloth that had been wound around the middle of the rolls, but not without being admonished by the old finisher, who was "showing me around," that such a thing would never do, for I would never get the middle properly gigged without the "required" building up of the rolls in the middle. However, the gigging was accomplished with less than half the usual runs, and when the cloth came to the shear the finish was uniform. The grease in the goods had been a hindrance to the uniform gigging and shearing, and when the cause was removed the trouble ceased.

The second case was very similar, but the cloth was made tender on account of being sheared too hard. The blades were forced upon the cloth so hard that they acted on the principle of a planing machine, and the result was tender cloth. Neither the superintendent nor the finisher suspected that the goods were dirty, but they were painfully sure they were tender. To correct this the superintendent introduced a percentage of much coarser wool, on the theory that the coarser stock would be correspondingly stronger. As the warp and filling were spun from the same lots, the change affected both. The goods were hair-lines, requiring uniform and perfect yarn. When the new mixture came to the looms there was a new trouble; and when the cloth was finished there was double trouble. The introduction of the coarse fibers resulted in twitty yarn, and not only did the weaving go bad, but the uneven yarn produced anything but a perfect hair-line.

A new superintendent was engaged to restore order. He first got the fulling and scouring righted, which stopped the necessity of scraping the cloth. Then he went back on to the old quality of wool, which was fine Ohio, and almost the last in the world to make tender cloth. Not long after, 30 per cent. of fine shoddy was used, causing no trouble from tender cloth. It was always a wonder to the owners, how goods that were tender could be strong after introducing 30 per cent. of low stock. The superintendent never told them the real cause of the trouble, but they gave him credit for getting things straightened out. Not only were the goods strong, but the shoddy being sufficiently fine to work perfectly with the wool, the twits disappeared, and strong and perfect cloth

was the reward for remedying the difficulty in the wet finishing room.

When the cloth is thoroughly cleaned two-thirds of the dry finishing is done; but when the cloth is dirty the dry finishing can never be done properly. Not only does it affect the dry finishing; but with piece-dyed goods there is no end of trouble in the dyeing department.

IMPROVEMENTS IN COTTON BLEACHING

By WALTER S. WILLIAMS, Textile Expert, Arthur D. Little, Inc., Boston, Mass.

(Presented before the Congress of Technology.)

(Continued from October.)

This latter is a more or less complicated inclined trough so arranged that while cloth is entering at the upper end and leaving at the lower, a large amount of slake cloth fills the length of the incline and allows time for the action to take place. To increase the time of action, several of the chutes may be arranged in series, the cloth passing over a reel between each. From this step the goods pass directly to a small washer and are then squeezed and piled in a bin. As wanted they are drawn through a saturating machine, where they are impregnated with caustic soda at 3° Tw., containing 0.5 per cent. sodium bisulphite solutions and packed directly in the boiling kier. This kier should be of the vertical pressure type with outside vomit pipes and pump circulation. The perforated false bottom should be conical in shape and so arranged as to give a much larger space at the bottom than is usually allowed, and should be provided with both closed and open steam pipes. The closed coil should be sufficient to maintain the kier at boiling during circulation after that temperature has been reached, and must be provided with a suitable trap to remove the hot water and return it to the hot well or feed water heater. The goods are evenly plaited and tramped in the kiers by boys in the usual manner, to within 2 1/2 or 3 feet of the top. The air is next replaced by admitting steam and a charge composed of 3° Twaddle caustic containing 3 per cent. of resin soap run in to cover the goods. The kier is brought to a boil with the open coil at a pressure of 15 pounds, a small vent pipe being open to allow the escape of air.

When the goods are boiling, the open pipe is nearly closed and the boiling is continued for 6 to 8 hours with the use of the closed coil as far as possible. The charge is washed in the kier, care being taken to prevent access of air to the hot fabric. The pieces are then run out of the kier through a washer, squeezed and returned to another kier, where the kier where the boil is repeated, but with the omission of the resin soap. Experience seems to indicate that two boils are necessary to produce a thorough bleaching without over treatment in the subsequent steps.

The goods are next run through the chemic and piled in open bins for 2 to 6 hours. The best results are produced at the greatest economy by the use of hypochlorite of soda prepared as already described, but with experience and care very satisfactory results are obtained, by the use of hypochlorite of lime solution at 1/2° to 3° Twaddle.

Continuous processes which subject the fabric for a short period to a very strong chlorine solution, or which sour the cloth after chemicing without previous washing, are necessarily injurious to the fiber and unsatisfactory in other important respects. The pieces after lying exposed to the air for a suitable length of time are washed, soured through sulphite at 1° to 2° Twaddle, washed twice and are then ready for opening, drying and finishing as desired.

Bleaching today is not an exact science and depends for success upon experience combined with close observation and understanding of the various processes. If the heads of the industry in this country could be brought together for an interchange of experience and frank discussion of the most promising lines of research, a great advance would be produced in the art, but in any case we may expect sooner or later more economical and efficient processes to replace many of those now in use.

The consumption of American cotton by Northern mills is given as 2,214,180 bales.

PRACTICAL DYEING

BY RENMARK

(Continued from October.)

CARBONIZING

Concentrated sulphuric acid, also known as oil of vitriol, causes the fiber to swell up and form a gelatinous mass and in sufficient time dissolves the cotton completely. Use is made of this fact to separate cotton from wool, the process being known as carbonizing. The material is put into a solution of sulphuric acid, 10° to 12° Tw., and left for about two hours, then hydro-extracted and dried at a high temperature. In drying, the sulphuric acid destroys the cotton and other vegetable material, which can then be beaten out as dust. The material is next neutralized with soda ash or ammonia. The wool is not attacked by the acid.

Nitric acid in a cold, strong solution has an animalizing effect on cotton; in other words, increases the affinity of the cotton fiber for the acid colors by causing the cotton to assume some of the properties of wool.

Strong, hot nitric acid decomposes cotton. Hydrochloric acid, also known as muriatic acid, can be used for carbonizing cotton in the same way as can sulphuric acid. A cold solution of hydrochloric acid has very little effect on the cotton fiber. The weak organic acids, such as acetic, tartaric, oxalic have no injurious effect on cotton even in a boiling solution. Acetic and tartaric acids find a commercial use when properly applied to cotton by giving the fiber a scroop finish. This gives the material the crackling sound familiar in silk goods. The process is as follows:

After dyeing, the goods are washed as usual and handled for about half an hour in a fresh bath made up with sufficient water and 10 per cent. of soap, then hydro-extracted and put into a fresh bath containing 5 per cent. of tartaric acid or 10 per cent. of acetic acid. Work fifteen minutes, rinse and dry. The percentages refer to the weight of the material.

ALKALIES

Although there are numerous exceptions, acids injure cotton and alkalies have a harmful effect on wool. Alkalies turn red litmus paper blue. Alkalies such as soap, borax, phosphate of soda, ammonia, etc., have practically no effect on the cotton fiber either in a cold or hot solution, with the exception that they have a tendency to impart to the cotton a softer and more desirable feel. Caustic soda, a powerful alkali, differs materially from those mentioned and under proper conditions exerts a wonderful effect on cotton, and produces what is known as mercerized cotton. The cotton is put under tension previous to being immersed in the mercerizing solution. The solution used is caustic soda at a strength of 50° to 70° Tw. and a temperature of 60° F. This part of the process is completed in a very short time, only a few minutes being required. The cotton is put immediately into a bath of dilute sulphuric acid in order to neutralize the caustic soda, and afterwards is well washed. As the yarn must be saturated while under tension only strong cotton yarn can be mercerized. This eliminates the cheaper single yarns and forces the manufacturer to use the more expensive twisted yarns. Mercerizing increases the tensile strength of the cotton from 15 to 50 per cent., according to conditions, and contracts the yarn 1/4 to 1/5 in length. The affinity for coloring matters is also greatly increased, amounting to a saving of around 20 per cent. of the dyestuff required for unmercerized cotton.

This contraction, caused by the action of caustic soda, is utilized for producing crimps or puckered effects in cotton cloth. This can be accomplished by printing with thickened caustic soda, or by first applying a gum solution to the portions of the cloth, drying it and then passing through a solution of caustic soda which is resisted wherever the gum covers the cloth. The material shrinks where touched by the caustic, and a crimp effect is formed. Chloride of lime finds practical application as a bleach for cotton, being cheap and effective and the method of accomplishing the desired result is simple. In the raw state cotton contains many impurities, which renders it not only unsuitable for commercial purposes, but which imparts a

dark yellowish color. Cotton is very seldom bleached in the raw state as the different waxy and other substances facilitate the processes of carding and spinning. Cotton is bleached in the yarn and piece, usually in the piece.

As to the suitable condition of cotton previous to dyeing if ordinary shades are desired, it is sufficient to simply boil the cotton in soda ash or caustic soda, as this removes the wax like substances. Cotton contains many impurities insoluble in water, but soluble in an alkaline solution, hence the necessity for using soda. If the resultant liquor is examined, it will be found to have assumed a dark brown color, caused by the substances removed from the cotton. If, however, bright shades are desired or if the cotton is to be sold as white, it becomes necessary to put it through the bleaching process. The cotton is boiled from five to ten hours in an air tight kier, a tank very much resembling a boiler, with the addition of 2 per cent. of caustic soda or 4 per cent. of soda ash, and a small quantity of Turkey red oil. It is necessary to have the kier air tight as the admission of air would cause the formation of oxy-cellulose and tender the cotton. A test for oxy-cellulose is the application of a weak solution of Methylene Blue which has a distinct affinity for it, but very little for plain cotton. Cotton tendered by acids does not show an increased affinity for Methylene Blue. The cotton is then washed and put into a clear, cold filtered solution of chloride of lime, the strength being from 1° to 2° Tw., and left about half an hour, being handled at regular intervals. It is then washed and soured for ten minutes in sulphuric or hydrochloric acid, at 1/2° to 1° Tw., the hydrochloric being preferable if there is any iron in the water. Bisulphite of soda can also be used after the lime bath.

The cotton is again washed and soaped hot to remove all traces of acid, for if any acid remained it would tender the goods when dry. If the cotton is not to be dyed, but is wanted in the white, a little blue is added to the soap bath to make a better white, as a blue white is the most attractive white on cotton. Methylene Blue and Methyl Violet are the colors most frequently employed, although there is a tendency toward the use of colors fast to light. Some bleachers are using vat colors like Algol Blue and Indanthrene, while others advocate the use of Bendizine colors. If cotton is boiled in a strong solution of chloride of lime it loses its strength. Reducing agents have practically no effect on cotton.

Strong oxidizing chemicals such as permanganate of potash, chromic acid and chloride of lime affect the fiber materially, at times converting it into oxy-cellulose, of which the principal property being its direct affinity for basic colors. Aluminium Chloride finds application on cotton as a mordant for alizarine colors and is also used to some extent for carbonizing cotton. The material is handled in the above in the same manner as when using sulphuric acid for carbonizing, but is dried at a higher temperature. When the solution of the aluminium dries it is decomposed and liberates free hydrochloric acid. Magnesium chloride can also be used for carbonizing cotton. The tannins seem to be the only mordants having a direct affinity for the vegetable fiber and their use is very general.

Linen is a better conductor of heat than is cotton, and this accounts for the fact that linen articles are cooler to the touch than cotton. Linen absorbs water more readily than does cotton and this makes its use as a towel preferable to cotton. The action of acids and alkalies is about the same as for cotton except that the linen is more easily affected. Linen does not take dyestuffs as readily as cotton. The bleaching of linen is much more difficult than the bleaching of cotton and the loss in weight from bleaching is considerable, owing to the fact that linen contains so many impurities. An old method in bleaching consisted in exposing the linen cloth in fields to be acted upon by the light, air and moisture, an occasional wetting being given to the goods in dry weather. The bleaching effect is said to be due to ozone and peroxide of hydrogen, which exist in very small quantities near the ground.

Chloride of lime is also used for bleaching linen, but must be applied in very weak solutions, otherwise it is apt to weaken the fiber or set the color. As in cotton bleaching, the linen is boiled in a 10 per cent. soda ash solution for about six hours, washed well and extracted. It is then put into a cold solution of chloride of lime, 1/2° Tw., and washed. It is then soured with sulphuric acid at 1° Tw., and washed thoroughly. The linen is then boiled two hours in a solution of 2 1/2 per cent. of soda ash. Repeat operation until the desired bleach is obtained. It is necessary in order to preserve the strength of the linen to use weak solutions of the bleaching powder.

CHLORINATION OF WOOLEN GOODS

BY E. LODGE

Before the Huddersfield Technical College

The process known as the "chlorination of wool" was discovered, first investigated and introduced into commercial practice about the years 1839-40 by John Mercer, an eminent Lancashire textile chemist. This discovery was afterwards described as the most important made up to that time, in connection with wool dyeing and printing. Higgins, an authority on dyeing and printing, states that, but for Mercer's discovery, the printing by mechanical power of a certain class of union goods would have been impossible. Prior to Mercer's discovery of chlorination, much difficulty was often experienced in printing wool and cotton union cloths, owing to the wool part refusing to take the dye equally with the cotton. Mercer rightly attributed the resistance of the wool to certain dyestuffs, to a reducing property possessed by wool but not possessed by cotton. This idea led Mercer to seek for some oxidizing agent capable of destroying or neutralizing this reducing action of the wool. He found that a diluted acidulated solution of chloride of lime furnished the desired oxidizing agent, and the acids suitable for acidulating the bath, he found in hydrochloric or sulphuric acids. Mercer pointed out that if wool is treated with an acid solution of bleaching powder, that it was turned yellow in color, that the feel or handle of the goods was hard or "harsh," and, most important of all, the fiber had acquired a greatly increased affinity or attraction for many dyestuffs, and also for metallic salts, mordants.

In 1865, John Lightfoot patented the combined action of bleaching powder and an acid upon wool. Claiming the process as a preparation of wool in the dyeing of aniline black, Lightfoot discovered that chlorinated wool could be dyed aniline black with comparative ease, while unchlorinated wool is dyed with difficulty. His plan was to work the wool for 20 to 30 minutes in an acid solution of bleaching powder, or until the wool no longer rapidly decolorized a solution of permanganate of potash. He recommended 2 ozs. bleaching powder per gallon (10 lbs.) of water, and this is sufficient for 1 lb. of cloth = 12 1/2 per cent. on the weight of the wool. Mercer's process consisted in treating piece goods before printing, with a cold, clear solution of bleaching powder, rendered distinctly acid with either sulphuric acid or hydrochloric acid. The amount of bleaching powder should not, for this purpose, exceed 10 per cent. on the weight of the goods; 3 to 5 per cent. bleaching powder and 3 to 5 per cent. sulphuric acid, or its equivalent in hydrochloric acid will give a fairly heavy chlorination. The process can be varied and modified in various ways, but the following points must be observed:

1. The goods must be clean, especially free from grease.

2. Before entering the chlorination bath, the material must be thoroughly and evenly wet out.

3. The bleaching powder solution must be clear, that is, free from suspended particles of the powder. For this reason it is advisable to prepare the bleaching powder solution in a separate bath, by stirring the powder into a paste with cold water, diluting with more water, allowing the particles of undissolved matter to subside, and using the clear solution only. Should any solid particles get into the bath, defects in the form of

specks or spots are likely to occur, especially noticeable in piece goods.

If the solution is slightly clouded, the addition of the acid will render the bath clear.

4. The goods during treatment should not be cramped for room or liquor. Sufficient liquor should be used to enable free and easy working, or defects in the form of unevenness will arise.

5. Piece goods should be worked in the open width, and stone or wooden vessels used.

A good plan is to charge the bath with the requisite quantity of water, then run gradually by means of separate funnels, reaching to the bottom of the bath, the previously prepared bleaching powder solution and dilute acid, during the time the material is being worked in the bath. The material may also be first treated with the acid—cold or even warm—for 20 to 30 minutes, then the chlorinating agent, run into the same bath and worked for 15 to 20 minutes, cold, or cold on entering the goods, then gradually raising the temperature. Or the wool may be first worked for 15 to 20 minutes in an acid bath, cold or warm, then passed into a separate bath containing the bleaching powder solution.

(To be continued.)

Dye Recipes

The following recipes appear in the Dyers' Supplement, which is issued each month by the TEXTILE WORLD RECORD. The Supplement contains the colored samples, dyed according to recipes given. The selection of samples is carefully made, and it is the aim to show shades which are of especial interest to the dyer, and which the requirements of the market demand. The Dyers' Supplement is a 16-page pamphlet, in convenient form for preservation. Subscription price for the Dyers' Supplement $1.00 per year.

Recipe No. 161

BLACK ON RAW WOOL

Black on 100 lbs. raw wool. Mordant first with

3% Bichromate Potash.
3% Half Refined Tartar C.

Enter stock at a boil, boil 1 1/4 hours. Rinse well. Prepare the dye bath with

15 lbs. Hematine Paste 3 A Extra.
(American Dyewood Co., 84 William St., N. Y.)
1 lb. 8 oz. Extract Fustic A W.
2½ ozs. Alizarine Red A D Powder.

Enter at a boil, boil 1 1/4 hours, rinse, extract and dry.

The above dyeing represents a Mordant Black on raw wool to be recommended especially for its extreme fastness to fulling.

Recipe No. 162

YELLOW ON RAW WOOL

Extract Fustic on 100 lbs. raw wool. Mordant first with

3% Bichromate Potash.
3% Half Refined Tartar C.

Enter at a boil, boil 1 1/4 hours. Rinse well. Prepare the dye bath with

6 lbs. Extract Fustic A W.
(American Dyewood Co., 84 William St., N. Y.)

Enter at a boil, boil 1 1/4 hours, rinse, extract and dry.

The above dyeing represents a fast Mordant Yellow on raw wool especially to be recommended for its extreme fastness to fulling.

Recipe No. 163

VIOLET ON WORSTED YARN

Fast Violet No. 618 on 100 lbs. worsted yarn. Prepare the dye bath with

2 lbs. Fast Violet No. 618.
(F. E. Atteaux & Co., 174 Purchase St., Boston.)
2 lbs. Formic Acid.
10 lbs. Glauber's Salt.

Enter at 160° F., and dye at a boil for one hour.

Fast Violet No. 618 may be used as an afterchromed color, and when used in this manner is very desirable in the production of the popular shades at the present time.

Recipe No. 164

BLUE ON COTTON YARN

Katigen Azurine W R Extra Conc. on 100 lbs. cotton yarn. Prepare the dye bath with

6 lbs. Katigen Azurine W R Extra Conc.
(Farbenfabriken Co., 117 Hudson St., N. Y.)
12 lbs. Sodium Sulphide.
4 lbs. Soda Ash.

After heating this to 140° F., with the necessary amount of water for solution, add

30 lbs. Common Salt.

Dye the material for one hour, keeping the ma-

terial immersed in the liquor. Then squeeze thoroughly, and expose to the air for one hour, then rinse again.

Katigen Azurine W R Extra Conc. possesses very good fastness to light and alkalies. It also stands washing well.

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Recipe No. 165

PINK ON COTTON YARN

Helindone Pink B N on 100 lbs. cotton yarn. Prepare the stock liquor with

2 lbs. Helindone Pink B N.
(H. A. Metz & Co., 122 Hudson St., N. Y.)
12 gals. Hot Water,

to which has been added

6 lbs. Caustic Soda Solution 40° Be.
3 lbs. Helindoil.

To this mixture slowly add

1½ lbs. Hydrosulphite M L B Conc. Powder.

This solution should be well stirred, and then allowed to stand for 20 minutes. The temperature should not rise above 140° to 160° F. Complete reduction will be shown by its brownish color.

The dye bath should be prepared with the necessary amount of water to which has been added

2 ozs. Hydrosulphite M L B Conc. Powder.
4 ozs. Caustic Soda Solution 40° Be.

Dye for 1/2 hour at a temperature of 120° F., then allow to oxidize in the air for 15 minutes. Then soap for 1/2 hour at a boil in a solution made up with two parts soap per 1,000 parts water.

Helindone Pink B N possesses remarkable fastness to alkali, washing and chlorine bleach, and is recommended where these qualities are essential.

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Recipe No. 166

VIOLET ON WORSTED YARN

Azo Fast Violet R R on 100 lbs. worsted yarn. Prepare the dye bath with

2 lbs. Azo Fast Violet R R.
(Cassella Color Co., 182 Front St., N. Y.)
20 lbs. Glauber's Salt.
4 lbs. Sulphuric Acid.

Enter at 160° F., and dye at a boil for one hour.

Azo Fast Violet R R possesses excellent fastness to light, alkalies, carbonizing, and its fastness to washing is also good. Cotton effect threads are not stained in the dyeing of worsted material.

Recipe No. 167

BLACK ON COTTON AND WOOL UNION MATERIAL

Union Brilliant Black T on 100 lbs. cotton and wool union material. Prepare the dye bath with

5½ lbs. Union Brilliant Black T.
(Badische Co., 128 Duane St., N. Y.)
20 lbs. Glauber's Salt.

Enter at 180° F., and dye at a boil for 3/4 of an hour, then work in a gradually cooling bath for 1/2 hour.

Union Brilliant Black T possesses good fastness to light and washing, and will be found to have excellent covering power for all vegetable fibers present in conjunction with wool.

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Recipe No. 168

BROWN ON COTTON YARN

Drazaline Brown N on 100 lbs. cotton yarn. Prepare the dye bath with

2 lbs. Drazaline Brown N.
(E. M. Thayer & Co., 411 Atlantic Ave., Boston.)
20 lbs. Common Salt.

Dye at a boil for one hour.

Drazaline Brown N possesses the usual properties of the substantive colors, and is particularly useful as a basis for all dark browns. It dyes very level and goes on slowly.

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Recipe No. 169

SCARLET ON WORSTED YARN

Azerole Fast Scarlet 4 B on 100 lbs. worsted yarn. Prepare the dye bath with

3 lbs. Azerole Fast Scarlet 4 B.
(Innis, Speiden & Co., 46 Cliff St., N. Y.)
20 lbs. Glauber's Salt.
4 lbs. Sulphuric Acid.

Enter at 160° F., and dye at a boil for one hour.

Azerole Fast Scarlet 4 B is very fast to light and cross dyeing.

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Recipe No. 170

BLUE ON COTTON AND WOOLEN UNION GOODS

Naphtamine Union Blue W B on 100 lbs. cotton and wool union material. Prepare the dye bath with

7½ lbs. Naphtamine Union Blue W B.
(Kalle & Co., 530 Canal St., N. Y.)
20 lbs. Common Salt.

Start the dyeing at 140° F., bring to boil in 1/2 hour and boil for 1/2 hour. Rinse with lukewarm water.

Naphtamine Union Blue W B will be found to possess excellent fastness to light, hot pressing, etc., and will be found to be of special value for the dyeing of union fabrics containing white resist silk effects.

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Recipe No. 171

YELLOW ON WORSTED YARN

Azo Milling Yellow R on 100 lbs. worsted yarn. Prepare the dye bath with

3 lbs. Azo Milling Yellow R.
(Geisenheimer & Co., 189 Front St., N. Y.)
4 lbs. Sulphuric Acid.
10 lbs. Glauber's Salt.

Enter at 120° F., and dye at a boil for one hour.

Azo Milling Yellow R possesses very good fastness to light, acids and alkalies.

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Recipe No. 172

BLUE ON WORSTED YARN

Alizarine Blue S R on 100 lbs. chrome mordanted worsted yarn. First mordant the yarn in a bath made up with

3 lbs. Potassium Bichromate.
2 lbs. Tartar.

Enter at ordinary temperature, bring slowly to a boil, and mordant at a boil for 1 1/2 hours.

The dye bath is then made up with

4 lbs. Alizarine Blue S R.
(C. Bischoff & Co., 451 Washington St., N. Y.)
1 lb. Acetic Acid.

The material is entered at 100° F., brought slowly to a boil, and dyed at a boil for 1 1/2 hours.

Alizarine Blue S R is extremely fast to light and fulling, penetrates well, and dyes very level.

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Recipe No. 173

BLACK ON COTTON AND WOOL UNION MATERIAL

Union Brilliant Black B on 100 lbs. cotton and wool union material. Prepare the dye bath with

5½ lbs. Union Brilliant Black B.
(Badische Company, 128 Duane St., N. Y.)
20 lbs. Glauber's Salt.

Enter at 180° F., and dye at a boil for 3/4 of an hour, then work in a gradually cooling bath for 1/2 hour.

Union Brilliant Black B possesses good fastness to light and washing, and will be found to have excellent covering power for all vegetable fibers present in conjunction with wool.

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Recipe No. 174

BLUE ON COTTON YARN

Isamine Blue 8 B on 100 lbs. cotton yarn. Prepare the dye bath with

1½ lbs. Isamine Blue 8 B.
(Cassella Color Co., 182 Front St., N. Y.)
30 lbs. Common Salt.
1 lb. Acetic Acid.

Enter at 180° F., and dye at a boil for one hour.

Isamine Blue 8 B is well adapted for the production of a brilliant blue on artificial silk and mercerized cotton.

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Recipe No. 175

RED ON WORSTED YARN

Alizarine Red S P on 100 lbs. worsted yarn. Prepare the dye bath with

3 lbs. Alizarine Red S P.
(C. Bischoff & Co., 451 Washington St., N. Y.)
5 lbs. Acetic Acid.
10 lbs. Glauber's Salt.

Enter at 120° F., bring slowly to a boil and dye at a boil for one hour. Then add

1½ lbs. Potassium Bichromate

and continue the boiling for one hour.

Alizarine Red S P is extremely fast to light and fulling, penetrates well and dyes very level.

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Recipe No. 176

RED ON WORSTED YARN

Anthranol Rubinol on 100 lbs. worsted yarn. Prepare the dye bath with

2 lbs. Anthranol Rubinol.
(F. E. Atteaux & Co., 174 Purchase St., Boston.)
2 lbs. Formic Acid.
10 lbs. Glauber's Salt.

Enter at 160° F., and dye at a boil for one hour.

Anthranol Rubinol may be used as an afterchromed color, and when used in this manner is very desirable in the production of the popular shades at the present time.

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The estimated world's consumption of silk in 1910 amounts to 56,454,926 lbs., an increase of some 700,000 lbs. over the corresponding figure for 1909.

New Machinery and Processes

This department is designed to present from month to month a brief mention of new machinery, devices and processes being brought out in this country and abroad, that are of interest to the textile manufacturers. It is not a list of patents but of improvements on the market, the idea being to present to our readers a systematic monthly record of new machinery, etc., of interest to textile mill men.

Whenever possible we endeavor to make a personal investigation of the new machinery and processes described in this department. In the absence of such personal investigation we must necessarily rely upon information obtained from those who control the machines and processes.

We invite machine builders and others to send us such information for this department.

Press for Hosiery and Underwear. The United States Hoffman Co., Syracuse, N. Y., are placing on the market an improved twin press for hosiery and underwear. A description of it appears in this issue.

"High Speed" Spinning Ring. The High Speed Spinning Ring Co., 811 Tremont Bldg., Boston, Mass. A new type of spinning ring enabling the spindles to be operated successfully at a very high speed, hence its name. A description appears in this issue.

Cloth Conditioning Machine. A. W. Buhlmann, Silk Exchange Bldg., New York, is placing on the American market an improved machine for shrinking wool goods. The machine is described in another part of this issue.

Looper. The Beattie Manufacturing Co., Cohoes, N. Y. An improved two-thread stitch looper called the "Nonpareil," a notice of which appears in this issue.

Cloth Expander. Philipson & Co., Bolton, England. An improved cloth expander of the well known type, consisting of sliding bars mounted on a shafting and operated by cams. The improvement consists in the method of connecting the cams with the bars and also in the method of producing spiral corrugations on the surface of the bars.

Top Dyeing Machine. Heymann, Gaisman & Co., Manor Row, Bradford, England. An improved dyeing machine for worsted tops. It operates on the circulating system, the balls being packed tightly in metal cylinders and the liquor then forced through the material.

First Breaker Feed. Ernst Nolte, Wiesbaden, Germany, has recently brought out an improvement in self-feeds for first breaker cards, designed to secure greater uniformity in the delivery of the material.

Braiding Machine. Gustav Krenzler, Barmen, Germany. An improved single thread braiding machine embodying important improvements in the method of driving.

Shuttle for Narrow Fabrics. Peter Kaiser, Ronsdorf, Germany. A shuttle for narrow fabric looms which it is claimed embodies a number of important improvements.

Spindle Driving Mechanism. Oerlikon Maschinenfabrik, Oerlikon, Switzerland. An electrical device for regulating the speed of spinning and twisting spindles to conform to the varying diameter of the bobbin as the latter is being built up.

Spool for Dyeing Machines. Federico Hofmann, Turin, Italy. An improved spool for holding tops and drawing sliver on spools during the dyeing process.

Washer and Squeezing Rollers. Rhodes Gill & Co., Leeds, England. An improved method of constructing rollers for washing, squeezing and similar machines.

Ring Frame. J. J. Rieter & Co., Winterthur, Switzerland. A ring frame for spinning filling yarn. It is claimed that the results heretofore obtainable only on the mule can be obtained by this machine.

Thread Extractor. C. Oswald Liebscher, Chemnitz, Saxony. An improved thread extractor for cotton waste which is said to give a large production and to remove threads thoroughly from the waste.

THE "HIGH SPEED" SPINNING RING

The ordinary spinning ring, as found with slight variation in every cotton spinning mill, is the only form of ring that has been extensively used for ring spinning during the past half century, although many attempts have been made to construct a ring that would be an improvement by producing better yarn or giving an increased production. Recently there has been placed on the market what is known as the "high speed" spinning ring, so named because of the very high speed at which it can be operated. It is manufactured by the High Speed Ring Co., 811 Tremont Bldg., Boston, Mass.

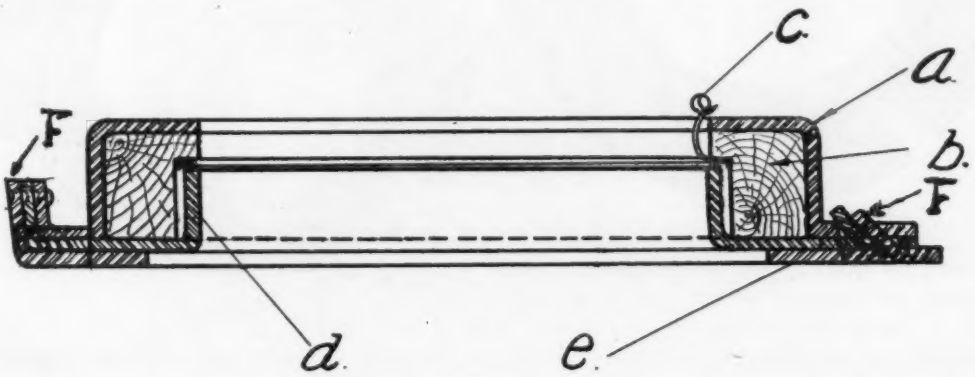


FIG. 1.

The new ring contains a liner, B, Fig. 1, placed between the top and bottom plates, A and D. This liner is impregnated with a lubricant which oils the traveler and operating parts. As a result there is no heating of the traveler. The traveler is a complete ring of metal having a tongue, C, Fig. 1, rising from one side. The top of this tongue is turned with a pig-tailed twist forming an eye to receive the yarn. This traveler operates freely in a runway in which there is some play up and down and sideways. When in operation and suspended by the yarn it runs in the air, not coming but slightly in contact with other parts of the ring. This results in a very elastic and steady draft on the yarn, there being few broken ends even when the spindle is running twelve thousand revolutions per minute. It is well known that when the spindle is running above nine thousand revolutions with the ordinary ring, the travelers burn off rapidly and the work is apt to run badly. The builders of the "high speed" ring state that spinning frames with the "high speed" rings are being run under commercial conditions at a spindle speed of twelve thousand per minute on 22 3/4s warp, making good yarn and without any vibration of the spindles or heating of the travelers. Tests show that the yarn made with the new ring at this high speed is of excellent quality and from 3 to 6 per cent. stronger than yarn made by the ordinary ring at the usual speed.

The high speed ring also has a centering plate, E, which is permanently attached to the ring rail and automatically centers a new ring whenever applied to the rail. When it is desired to place rings of a different size on a frame, the old ring is snapped out of the centering plate and one of the other size snapped in place by means of the locks, F, no centering being required. This enables the rings on a frame to be changed in about twenty minutes, whereas changing the ordinary rings on a frame requires about half a day.

The new rings are made to fit the old screw holes in the ring rail, and the only change required when putting high speed rings on a frame is to provide new pulleys in order to get a higher speed. The new rings can be run at full speed when first put on a frame. Among the other claims made for the "high speed" ring is a better wind on the bobbin, the yarn being laid closer, enabling

more to be wound on a set. Piecing of broken ends is easier with the "high speed" ring, as the eye stands above the ring. The travelers are made of different weights for different kinds of work. The claims of the

FIG. 2.

builders for this ring may be summarized as follows: An increase of from 30 to 40 per cent. in the production; a ring that is indestructible under ordinary conditions; long life of the traveler; reduction of waste in

FIG. 3.

spinning; more yarn on a bobbin; less breakage in spinning; greater ease in piecing up and changing rings. As a result of the automatic oiling the traveler runs a long time without renewal; a guarantee of one year is given by the manufacturers of the ring. This is an advantage that will be especially appreciated by spinners who are forced so often to renew travelers. The "high speed" ring is in operation in New England mills. A spinning frame having one side equipped with the ordinary rings and the other with the high speed rings is now in operation in Boston where anyone interested can inspect it by arrangement with the High Speed Ring Co. The spindles on both sides of the exhibition frame are running 12,000 revolutions per minute. Those fitted with the "high speed" ring run steadily with little breakage

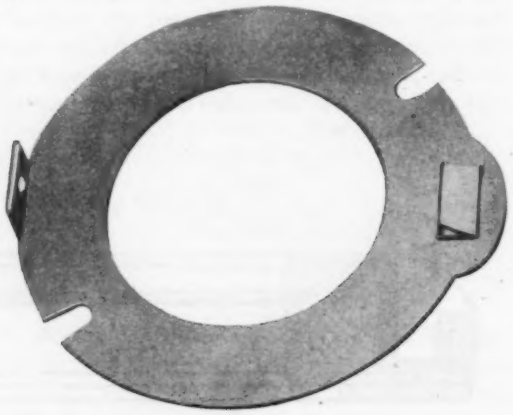


FIG. 4.

of the yarn at this speed, while the ends on the other side having the ordinary ring are constantly breaking.

Fig. 2 shows the ring, centering plate and traveler complete. Fig. 3 is the traveler and Fig. 4 the centering plate.

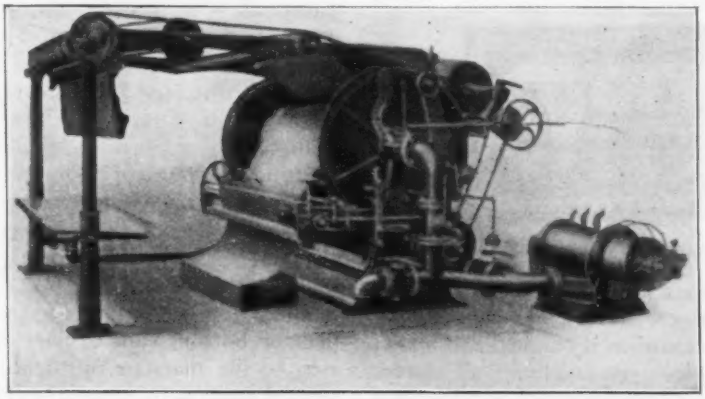
THE BEATTIE NONPAREIL LOOPER

An improved looper, called the "Nonpareil," has recently been brought out by the Beattie Manufacturing Co., Cohoes, N. Y. It is a two-thread stitch machine doing the work that is at present in such demand. The well known curved needle and two hooks are used with this looper. The needle and one of the hooks are threaded. The construction is such as to dispense with all cams and springs. The looper is operated entirely by eccentrics which ensures smooth running and permits of unlimited speed. The "Nonpareil" looper has been subjected to prolonged working tests and results have been so satisfactory that the builders now feel warranted in recommending the machine to the trade.

THE YALE CLOTH CONDITIONING MACHINE

The illustration shows the Yale cloth conditioning machine for which A. W. Buhlmann, 487 Broadway, Silk Exchange Bldg., New York, is agent. This machine is designed for shrinking wool goods, making them ready for the needle. It is claimed that the Yale machine will do the work of a London shrinking plant and that it solves the difficult question confronting woolen and worsted manufacturers as to how they can prepare their products so as to meet the requirements of the clothing trade regarding shrinkage. The fabric is wound by the Yale machine without tension on a large perforated cylinder along with a leader of special cloth. After being wound the goods are treated with a mixture of low pressure steam and air, entering the cylinder from both sides and penetrating the cloth on the roll. The moist steam supplies the normal amount of moisture and gives the cloth a full, soft handle.

After treating with steam and air the goods are cooled by means of a powerful vacuum pump which chills the fiber, conditions the fabric, fastens the luster and puts the goods in proper condition for the needle. The leader of special cloth serves the purpose of press papers. The machine is adapted for all grades of goods and a special construction of the cylinder prevents water spots. Mr. Buhlmann states that the Yale machine enables manufacturers to obtain results equal to those of the London shrinking process and without occupying the large space or incurring the very great expense necessary with the London plant. He will be pleased to give further information regarding this machine to anyone interested.



THE YALE CLOTH CONDITIONING MACHINE

COUNTING MACHINES

Accurate, precise facts are sought more earnestly in manufacturing today than ever before. The wide discussion and interest in the principles of "Scientific Management" have awakened every employer to a keen realization of the necessity for collecting, recording and classifying detailed facts, which will enable him to keep pace with, if not outstrip, his competitors. Many such facts can be secured in textile mills through the use of counting machines.

The illustrations show the counters made by the W. N. Durant Co., of Milwaukee, Wis. In their wide variety of sizes and styles this concern offers a counter for practically any application about a mill, whether it be to measure cloth or thread, to count operations or revolutions of machines, or to act as a tell tale on operators' efficiency.

The Model B Lineal or Rotary Counter is capable of wide application and can be supplied with five, six or more digits. The unit digit wheel registers one with each revolution of the shaft, subtracting

when reversed. The mechanism is full geared, no springs whatever entering into its operation of counting; all parts are machined with the greatest accuracy, thus insuring smooth running quantities, and the materials used are those best adapted to each individual part. The driving parts of the unit wheel are of case hardened steel, the gears and pinions of milled brass, and the digit wheels of a light colored composition offering a strong background for the prominent black figures.

The same model is made in a reciprocating

A DURANT COUNTING MACHINE

type with a lever for attaching to moving parts of machines, or for hand operation. The driving mechanism is original and a very dependable device. It precludes all chance of the unit wheel skipping and yet does not

ANOTHER TYPE OF THE DURANT COUNTING MACHINE

interfere with the simplicity of the resetting operation.

To reset the digit wheels of the Model B Durant Counter, two different plans are followed. In the standard machines the lid is raised and each wheel pushed forward to "O" with the thumb. The operation is simple and requires little time or effort. In the Special Model B a thumb nut at the left of case controls all the digit wheels and a single turn of it will instantly bring them all to "O."

The counters described are but a small part of the wide line shown in the catalogue of this company, who have manufactured counting machines exclusively since 1879. They are now well represented in the textile field, having recently established two agencies to look after their interests: In New England, Wm. V. Threlfall Co., Marshall Bldg., Boston; in the South, Byrd Textile Machinery & Supply Co., Durham, N. C.

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AN IMPROVEMENT IN RIB KNITTING MACHINES

The object of this improvement in rib knitting machines, which has recently been patented, is to prevent displacement of the stitches upon the needles of the idle set in each needle carrier when the needles of the active set in the other carrier are being advanced so as to engage the knitting yarn.

Fig. 1 is a vertical sectional view of a knitting machine of the type to which the invention relates, illustrating the position of the needles of the two sets at the time that one set of needles is being employed for knitting the web and the other set of needles is idle or out of action; Fig. 2 is an inverted plan or bottom view of part of the dial cam ring of the machine, illustrating two of the sets of cams with which the dial cam ring is provided; Fig. 3 is a view showing two sets of cams of the cylinder cam ring developed in a flat plane; and Fig. 4 is a transverse vertical section on the line a—a, Fig. 2.

The machine is intended for the production of a fabric comprising two ribbed webs interlocked by the crossing of their sinker wales, a needle wale or wales of one web alternating with a needle wale or wales of the other web on each face of the fabric. The invention is applicable to either straight or circular machines and in the present instance is illustrated as applied to a machine of the circular type.

Both the needle cylinder and dial are equipped with two sets of needles, one set for producing one of the ribbed webs and the other set for producing the other ribbed web, the needles of each set in each needle carrier being disposed with respect to the needles of the corresponding set in the other carrier in accordance with the character of the ribbed fabric which is to be produced. If each of the ribbed webs is to be a one-

and-one web, single needles of each set in one carrier will alternate with single needles of the corresponding set in the other carrier; while if each ribbed web is to be a two-and-two web, pairs of needles of each set in one carrier will alternate with pairs of needles of the corresponding set in the other carrier, other forms of rib requiring a corresponding change in the grouping of the needles and their disposal in respect to one another.

In Fig. 1 of the drawing x represents one of the needles of one set in the cylinder and y represents one of the needles of the corresponding set in the dial, x′ and y′, representing needles of the other set in the cylinder and dial, respectively. As in the former machine, the needles, x and y, cooperate at one yarn feed to produce one of the ribbed webs; and the needles, x′ and y′, cooperate at a succeeding yarn feed to produce the other ribbed web, each set of needles being inop-

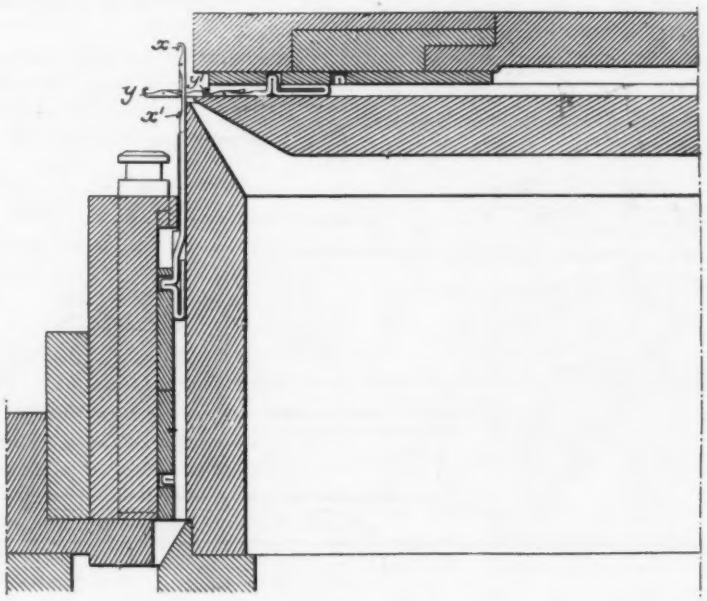

FIG. 1.

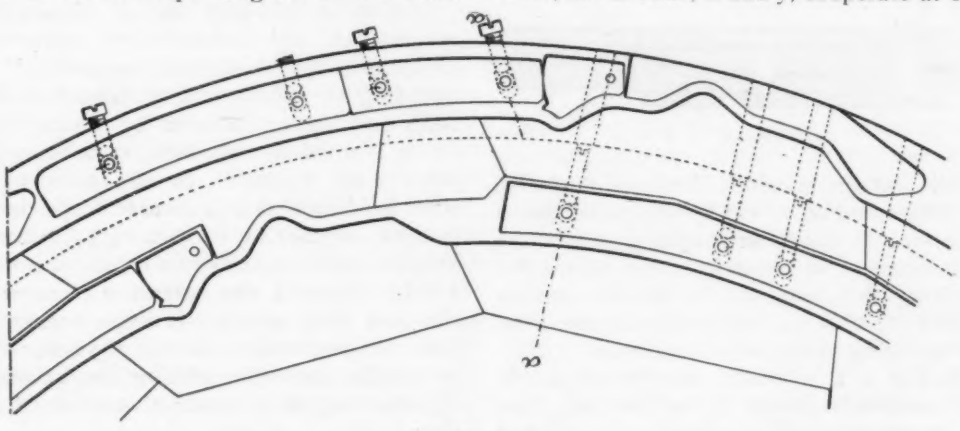

FIG. 2.

erative at the time that the other set is knitting.

It has been found in practice that when the needles of one set in one needle carrier are being projected at the knitting point to receive the yarn for knitting one web, they have a tendency to roll the stitches of the other web over the hooks of the inactive needles of the other carrier so that the latter, when in turn projected at their knitting point, sometimes pass through a stitch of a preceding course and thus produce defective web. This tendency can be overcome if the hooks of the idle needles are drawn some distance inwardly from the edge of the

FIG. 4.

needle carrier in which they are mounted, as shown in Fig. 1, and the invention therefore consists mainly in providing each of the cam rings or cam carriers with means for effecting this retraction of the idle needles during the time that the needles of the other set are being projected so as to knit.

In Fig. 2, a hold-back cam for one set of dial needles is shown, also a hold-back cam for the other set of dial needles, a hold-back cam for one set of cylinder needles being represented in Fig. 3 and a hold-back cam for the other set of said cylinder needles being also shown in the same figure. It is preferable to render the hold-back cams adjustable either wholly as shown in Fig. 2, or as to that part which is acting upon the idle needles at the time when the needles of the other set are knitting, as, for instance, in Fig. 3.

To facilitate the construction of the cam ring the latter is made in sections, the ring comprising the central member, an intermediate member, and an outer member, as

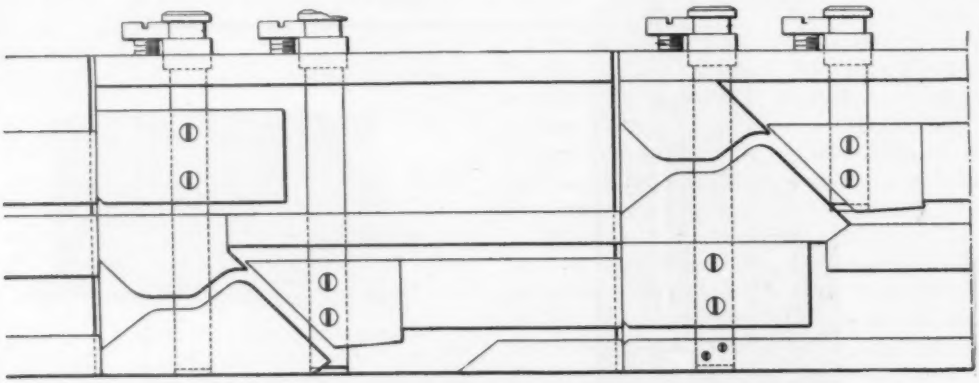

FIG. 3

shown in Fig. 4, the outer member carrying the outer hold-back cam, and the intermediate member carrying the inner hold-back cam, both being secured to the central member in such a manner as to insure the desired rigidity of the ring.

The outer hold-back cam is of sectional construction and each of these sections is secured to the outermost member of the cam ring by a bolt passing through a slot, adjustment being effected by means of a screw adapted to a threaded opening in the outer ring member. In like manner the inner hold-back cam is secured to the intermediate member of the cam ring by means of bolts, and is adjusted by means of screws suitably disposed, the outermost member of the cam ring having openings registering with said screws in order that the latter may be readily accessible without the necessity of removing the outermost member of the ring.

The adjustable members of the hold-back cams and of the cylinder cam ring are carried by posts suitably mounted in the cylinder cam ring and adjusted by means of screws, as shown in Fig. 3

TREATING MERCERIZED GOODS

A German process for treating mercerized goods, recently patented in the United States, is described by the inventor as follows:

A crackling feel is given to mercerized cotton goods by working them in a soap bath and souring afterward. If in this process goods are used which have been dyed with sulphurized dyestuffs, the color acid of the dyes is liberated by the action of the acid used in the souring process. The sulphur of the dyestuff then becomes oxidized to sulphuric acid gradually or at once according to the conditions. This acid tenders or even disintegrates the cotton fiber on prolonged storage, hot pressing, shrinking and finishing of hosiery. To avoid this tendering of the fiber an addition of 5 to 10 parts by weight of sodium acetate per 1,000 parts of acid bath (10 parts of acetic acid per 1,000) has been proposed. The prescribed quantity of sodium acetate prevents the deterioration of the fiber only partly. A 2/40 Egyptian yarn dyed with sulphur black lost 75.82 per cent. of its original tensile strength by the process of giving it a crackling feel by means of acetic acid (10 parts per 1,000) and steaming afterward (one hour at 1 1/2 atmospheres); 30.42 per cent. by addition of 5 parts of sodium acetate per 1,000 parts of acid bath; and 8.59 per cent. by addition of 10 parts of sodium acetate.

To preserve completely the tensile strength of the cotton fiber an addition of a larger proportion of sodium acetate must be made to the acid bath. On applying such large proportions of sodium acetate in the process a crackling feel cannot be produced. On addition of 10 parts of sodium acetate per 1,000 the crackling feel will be very feeble, on addition of 15 parts it cannot be perceived at all. This process is, therefore, not fit to produce the scroop of silk on mercerized cotton goods, dyed with sulphurized dyestuffs, without reducing the tensile strength of the fiber.

According to the improved method a very good crackling feel can be imparted to cotton by means of hydroxy-carboxylic acids of the aliphatic series, to wit: lactic or tartaric acid, by the addition of such proportions of the salts of the said acids or by partly neutralizing the acids to such a degree that the cotton fiber may not be tendered. How much of the acid has to be neutralized or how much lactate or tartrate has to be added to the acid bath depends on the intensity of the dyeing, on the sulphurized dyestuff used in the dyeing process, and on the proportion of acid added to the bath. If in the process of imparting a crackling feel to cotton goods, dyed with 10 per cent. of thioxin black, 5 parts of lactic acid are to be used, about 15 parts of sodium lactate or 17 parts of lactic acid and 7 parts of anhydrous sodium carbonate or 22.4 parts of caustic soda lye of 30° B. must be added per 1,000 parts.

The best results in carrying out the new process are obtained if to one part of the acid used in the after treatment of the mercerized cotton, dyed with sulphurized dyestuffs, 3 to 5 parts of its salts are added. As the acids mentioned in the specifications are not suitable for producing a crackling feel on mercerized cotton, dyed with sulphurized dyestuffs, without weakening the tensile strength of the fiber, the particular action of the acids and their salts employed according in this invention for imparting the scroop of silk to cotton goods without reducing the tensile strength of the fiber could not be foreseen. The method is illustrated by the following examples.

Ex. 1. Fifty pounds of mercerized cotton yarn are dyed in the usual manner with a black sulphurized dyestuff, for instance thioxin RTo, rinsed and worked in a soap bath containing 5 to 10 parts of soap per 1,000 parts. The yarn is hydro-extracted without being rinsed and treated in a bath containing 17 parts of lactic acid and 7 parts of anhydrous sodium carbonate or 22.4 parts of caustic soda lye 30° B. specific gravity. The yarn is worked in this partly neutralized bath for 15 to 20 minutes hydro-extracted without being rinsed and dried. The yarn thus treated acquires a good crackling feel and the original tensile strength of the fiber is not altered by steaming under pressure or on prolonged storage. Instead of lactic acid and sodium carbonate or caustic soda lye 5 parts of lactic acid and 15 parts of sodium

lactate may be used to obtain the same result.

Ex. 2. The process is carried out according to Ex. 1, but instead of lactic acid 21.3 parts of tartaric acid or 5 parts tartaric acid and 25 parts of sodium tartaric and 11.5 parts of anhydrous sodium carbonate or 36.7 parts caustic soda lye, 30° B. may be used per 1,000 parts of dye bath.

TEXTILE COMBINES IN ENGLAND

The reports of all the English textile combinations for the past year have now been issued, and a general survey of the financial results is possible. In order to present as full details as possible of the results for the past two years we have prepared three tables, showing the capital, earnings, dividend payment and reserve strength of each company. The total capital of the combines under review is no less than £33,246,761, distributed as under:

	Debentures £	Preference £	Ordinary £	Total Capital £
Bleachers	2,250,000	2,281,000	2,289,096	6,820,096
Bradford Dyers	1,453,750	2,500,000	1,356,477	5,310,227
British Cotton Dyers	689,200	nil.	1,271,684	1,960,884
Calico Printers	3,200,000	3,016,104	2,010,736	8,226,840
English Sewing Cotton	967,270	1,000,000	1,000,000	2,967,270
English Velvets	209,475	211,886	290,083	711,444
Fine Spinners	2,750,000	2,500,000	2,000,000	7,250,000
Totals	11,519,695	11,508,990	10,218,076	33,246,761

The several capital accounts are practically unchanged, but since the completion of the financial year the Fine Spinners' Association has made a further issue of £750,000, represented by £500,000 cumulative preference and £250,000 ordinary shares, for investment in cotton estates in Mississippi and for other extensions. It will be noted that the several classes of capital are fairly equally distributed, the special exception being the case of the British Cotton Dyers' Association, where there is no preference issue, the main portion of the capital being in ordinary stock.

Our next table shows the disposable profits for the past two years after depreciation allowance and payment of debenture interest and preference dividend, the dividend rate paid on the ordinary share capital, and the amount placed to reserves:

	Available profit 1910	Available profit 1911	Dividend P.c. 1910	Dividend P c. 1911	Placed to Reserves 1910	Placed to Reserves 1911
Bleachers	187,580	187,526	4½	4½	50,000	50,000
Bradford Dyers	101,678	131,974	5	5	—	50,000
British Cotton Dyers	52,263	28,804	2½	2	10,000	10,000
Calico Printers	243,533	252,965	2½	3¼	200,000	185,000
English Sewing Cotton	296,360	188,545	10	10	160,000	80,000
English Velvets	22,722	33,961	7	7	5.000	20,000
Fine Spinners	198,220	266,844	8	8	50,000	100,000

We now come to the question of reserves, and in order to represent the matter in a plain form we place in the following table the total amount of reserves held by each company, and show the proportion which these bear to the share capital (preference and ordinary) without debenture liability; and we also give the amount carried forward at the close of the respective financial periods for the two past years:

	Total reserves £	Percentage of reserve to share capital £	Amount carried forward 1910 £	Amount carried forward 1911 £
Bleachers	500,000	10.94	64,715	99,232
Bradford Dyers	375,372	9.75	51,836	63,987
British Cotton Dyers	50,000	3.93	24,143	17,513
Calico Printers	735,000	14.62	30,313	22,875
English Sewing Cotton	425,000	21.25	92,000	100,545
English Velvet	50,000	9.94	17,382	11,037
Fine Spinners	1,200,459	26.67	189,956	196,801

The operations of these textile combines have been greatly prejudiced by many adverse conditions—labor disputes, short time, and more especially the high cost of materials have in their turn had an influence on results. The consequence of the high price of cotton has been an increased valuation of stocks on the merchant side of the manufacturing companies, and it is interesting and satisfactory that the companies thus concerned have put aside a portion of the reserves to meet any special downward trend of prices in case of a break in the markets.—The Manchester Guardian.

There are 38 cotton mills in Japan, in which there are 2,099,764 spindles and 17,202 looms, giving employment to 92,960 workpeople. The cotton consumed in these mills amounted to 543,592,000 pounds. The yarn produced amounted to 445,912,000 pounds; and the cloth, 226,314,000 yards.

Personals

E. H. Baines has been appointed superintendent of the Lloyd Mill of the Lehigh Valley Silk Mills Co., South Bethlehem, Pa. He was formerly employed for nine years at the Palace Ribbon Mfg. Co., Allentown, Pa.

William Hurtley has accepted the position as overseer of spinning at the North Adams Mfg. Co., North Adams, Mass. He comes from Hope Valley, R. I.

David A. Lapraik, overseer of dyeing at the Hewson Woolen Mills, Amherst, N. S., Canada, has severed his connection with that company.

John Marshall, superintendent of the Sawyer, Regan Co., Dalton, Mass., on his retirement from the mill to accept a similar position with the Yantic Woolen Co., Yantic, Conn., was presented with a gold watch chain, fob and meerschaum pipe by the help in the mill.

James Ransehausen has accepted the position as overseer of finishing at the Lawrence, Webster Co., Malone, N. Y., succeeding William Stuart.

William Grandage has accepted the position as overseer of dyeing at the Fidelity Finishing Works, Philadelphia, Pa.

J. G. Kennedy, overseer of carding at the Winder Cotton Mills, Winder, Ga., has resigned to accept a similar position with the Brogon Mills, Anderson, S. C.

A. P. Hurt, superintendent of the Anderson Cotton Mills, Anderson, S. C., has resigned to accept a similar position with the Clinton Cotton Mills, Clinton, S. C.

J. D. Tice, superintendent of the Chiquola Mill, Honea Path, S. C., has been appointed general superintendent of all the Hammett Mills, including also the Anderson Mills Nos. 1 and 2 and the Orr Mills, Anderson, S. C.

G. M. Tennyson of Spartanburg, S. C., has accepted a position with the Gaffney Mfg. Co., Gaffney, S. C., as overseer of carding. He succeeds J. W. Canady.

Andrew J. Brown, overseer of weaving, has been promoted to the position of superintendent of the Royal Bag & Yarn Mills, Charleston, S. C.

Daniel Fox, formerly overseer of weaving at the Burlington Mill, Winooski, Vt., has taken charge of the weaving on the night shift at the Rhode Island Worsted Co., Stafford Springs, Conn.

B. V. Searle, overseer of carding at the Bay State Mill, American Woolen Co., Lowell, Mass., has severed his connection with that company to accept a similar position with S. Slater & Sons, Webster, Mass.

Sydney Read David, for the past fourteen years in the employ of the Farbenfabriken of Elberfeld Co., has severed his connection with that company.

John Cornell has accepted the position as overseer of dyeing at the J. A. Humphrey & Son's Mill, Moncton, N. B., Canada. He comes from Auburn, N. Y.

Wm. J. Outhout, for a number of years superintendent of the Crescent Mfg. Company, New Bedford, Mass., has severed his connection with that company.

M. E. Stevens, for the past five years superintendent of the Columbus Mfg. Co., Columbus, Ga., has resigned to accept a similar position with the La Grange Cotton Mills, La Grange, Ga. Mr. Stevens was presented with a handsome watch charm and Masonic emblem of Knight Templars by his overseers. The charm was presented by the master mechanic, H. W. Carlisle, in behalf of the overseers. Mr. Stevens was invited up the river to Bridge Island where a magnificent banquet was served in his honor. Each and everyone expressed themselves as having a good time and wished Mr. Stevens the best of success in his new position.

Sam Pendlebury has resigned his position with Espen, Stewart & Loeb, of Philadelphia, as overseer of dyeing.

John Fitzgerald has accepted the position as overseer of dyeing at the Hoosac Worsted Mill, North Adams, Mass. He comes from Worcester, Mass.

Thomas Hallows, overseer of carding at the Globe Yarn Mill, Fall River, Mass., for the past 23 years, has resigned. He is succeeded by Samuel Fairhurst.

Wm. Arrott, Jr., has been selected as secretary and treasurer of the Ontario Spinning Co., Philadelphia, Pa., succeeding the late James P. Murphy.

H. J. Grunt has resigned as manager of the American Viscor Co., and is now traveling through Europe. He is succeeded by C. A. Emert, formerly head chemist for this company.

William Hurtley, overseer of dressing at the Auburn Woolen Co., Peterboro, Ont., Canada, has been appointed superintendent of that mill.

George Shiel, assistant superintendent and designer at the Oakland Mfg. Co., Reisertown, Md., has resigned to accept a position as superintendent of the Henry F. Scatchard Mfg. Co., Norristown, Pa.

Geo. H. Thomas has accepted the position as overseer of carding at the Bay State Mill, American Woolen Co., Lowell, Mass. He was formerly employed at the Middlesex Co., same city.

A. W. Lockwood has accepted the position as superintendent of the Urbana Mills Co., Urbana, O. He comes from Clinton, Mass., and succeeds H. Gaunt.

William Burke has accepted the position as overseer of burling and sewing at the French River Textile Co., Mechanicsville, Conn. He comes from Pittsfield, Mass.

A. F. Swanton, agent of the Stirling Mill, Lowell, Mass., and who had been connected with the Stirling Mill for a great many years, died recently. He was well liked by all in his employ and was well spoken of by all who knew him.

Timothy Moore, overseer of carding and spinning at the Josiah Perry Mill, Webster, Mass., has severed his connection with that company. He is succeeded by Alex Snow, who was formerly carder at the Slater Woolen Mills, same town.

Thomas Campbell, overseer of carding for A. D. Ellis & Sons' No. 3 Mill, Monson, Mass., has severed his connection with that company.

J. V. Owens has been promoted to superintendent at the Gluck Mills, Anderson, S. C.

J. F. Lockridge has accepted the position as overseer of dyeing at the Beaumont Mills, Spartanburg, S. C.

F. D. Williams, superintendent of the Gluck Mills, Anderson, S. C., has resigned to accept a position as overseer of carding at the Dixie Mills, La Grange, Ga.

W. H. Turner, superintendent of the Hogansville Mfg. Co., Hogansville, Ga., has resigned to accept a similar position at the Unity Cotton Mills, La Grange, Ga.

N. B. Hill, overseer of spinning at the Harriet Mill, Henderson, N. C., has resigned to accept the position as overseer of carding and spinning at the Caswell Mill, Kinston, N. C.

J. T. Phillips, overseer of dyeing at the Lily Mills, Spray, N. C., has resigned to accept a similar position with the Fort Mill Mfg. Co., Fort Mill, S. C.

W. F. Sawyer, from Knoxville, Tenn., has accepted the position as overseer of carding at the Weldon Cotton Mills, Weldon, N. C., succeeding Less Harlow.

Charles J. Alexander has been appointed manager of the Marston Worsted Co., Skowhegan, Me. He was formerly in the employ of the E. B. Moore Co., New York City, as styler.

A. H. Robbins, formerly superintendent of the Ide Cotton Mills, Jacksonville, Ala., has accepted a position as superintendent of the Avondale Cotton Mills, Birmingham, Ala.

John W. Crowther has accepted the position as superintendent and designer at the Sawyer, Regan Co., Dalton, Mass. He succeeds John Marshall.

Morris Gledhill, agent of the Marston Worsted Co., Skowhegan, Me., has severed his connection with that company and is to operate the Somerset Worsted Mill at East Madison, Me.

John Seilly has accepted the position as overseer of carding for the A. D. Ellis & Sons' No. 3 Mill, Monson, Mass. He was formerly employed at the Hartford Carpet Corporation, Thompsonville, Conn

Sidney W. Corson has accepted the position as overseer of carding at the Acushnet Mill, New Bedford, Mass. He was formerly second hand at the Manomet Mill, same city.

Walter Scott has been appointed overseer of finishing at the Woolen Mfg. Company, Beaver Dam, Wis., succeeding John Maguire.

Fred Wilks, engineer and master mechanic at the Woonsocket Worsted Mills, Woonsocket, R. I., has severed his connection with this firm after twenty-four years of service. He has not made his plans for the future.

Philip H. Manning, overseer of carding at the Columbia Mills, Lewiston, Me., has severed his connection with that company.

Fred Martel has accepted the position as overseer of dying for Espen, Stewart & Loeb, Philadelphia. He was formerly employed with the Wm. Spink Co., Manayunk, and succeeds Samuel Pendlebury.

Fred Allen, overseer of weaving at the Harrisville Mill, U. S. Worsted Co., Harrisville, R. I., has severed his connection with that company.

Alexander Melrose has accepted the position as overseer of dyeing at the Hewson Woolen Mills, Amherst, N. S., Canada.

Ernest Fernley has accepted the position as overseer of spinning at the Locustville Woolen Co., Hope Valley, R. I.

T. E. Mullis, formerly overseer of spinning at the Entwistle Mills, Rockingham, N. C., has accepted a similar position with the Lumberton Cotton Mills, Lumberton, N. C.

John Arnold has been appointed superintendent of the Atlanta Woolen Mills, Atlanta, Ga. He comes from Wytheville, Va.

A. C. Crawford has accepted the position of overseer of weaving at the Grendel Mill, No. 2, Greenwood, S. C. He comes from the Grendel Mill, No. 1.

W. M. Nixon, manager of the Park Woolen Mills, Rossville, Ga., has resigned to become president of the Atlanta Woolen Mills, Atlanta, Ga.

E. N. Keller, formerly employed at the Jennings Mill, Lumberton, N. C., has accepted a position as overseer of spinning at the Hannah Pickett Mill, Rockingham, N. C.

C. E. Rogers from Durham, N. C., has accepted the position of overseer of spinning at the Henderson Cotton Mills No. 2, Henderson, N. C.

John R. Scott, one of the oldest retired woolen manufacturers of Uxbridge, Mass., quietly observed his eighty-third birthday Oct. 16th. He was connected with the J. R. and C. W. Scott Woolen Mills of that town but retired from active business in 1909. His health is exceedingly good for a man of his age and he takes his daily walk to the center of the town.

Matthew L. Tait has accepted the position as overseer of weaving at the Saranac Mill, Black-

stone, Mass. He was employed for several years at the Beoli Mill, West Fitchburg, Mass.

Wm. Bevins has accepted the position as overseer of carding at the Hewson Woolen Mill, Ltd., Amherst, N. S., Canada.

Wm. H. Mitchell has accepted the position as overseer of carding at the Totokett Mfg. Co., Versailles, Conn. He comes from New Bedford, Mass.

Aldin B. Taplin has been appointed overseer of weaving at the U. S. Worsted Co., at their Uswoco Mill, Lawrence, Mass. Arthur Wicks has been appointed overseer of dressing at the same mill.

Robert Hutton has accepted the position of designer at the Oakland Mfg. Co., Reisertown, Md. He comes from Providence, R. I.

Philip G. Brug, assistant superintendent of the Wuskanut Mills, Farnumsville, Mass., has resigned.

John Grimshaw, overseer of weaving at the United States Cotton Co., Central Falls, R. I., has severed his connection with that company.

William Stuart has accepted a position as overseer of finishing for Fairbanks & Dorr, Guild, N. H. He was formerly employed for the Lawrence, Webster Co., Malone, N. Y.

Daniel N. O'Brien has accepted the position as overseer of weaving at the Corr Mfg. Co., East Taunton, Mass. He comes from New Bedford and succeeds Henry Barker.

Walter E. Devine has accepted the position of traveling salesman at the National Aniline & Chemical Works of Providence, R. I., succeeding Alfred Booth.

Henry Devine has accepted the position of overseer of carding at the Locustville Woolen Co., Hope Valley, R. I.

Edward Darling has accepted the position as overseer of dyeing at the Locustville Woolen Co., Hope Valley, R. I.

George A. Weldon has been appointed overseer of weaving at the Edwards Mfg. Co., Augusta, Me. He was promoted to overseer from the position of second hand.

DEATHS.

Frederick W. Reed, treasurer and superintendent of the Reed Carpet Co., Bridgeport, Conn., died at his home in that city at the age of 57 years. He became associated with his father in the business in 1884 and in 1893 was made treasurer of the company.

James Leavitt, for six years agent of the Griswoldville Mfg. Company, Griswoldville, Mass., died at his home at Biddeford, Me., after a short illness, at the age of 71 years. He had been connected with the Pepperell Mills for over 20 years and was a native of Saco, and is survived by a widow and two daughters.

James E. Dowd, for more than 22 years overseer of finishing at the Hillsboro Woolen Co., Hillsboro, N. H., died at the age of 64 years as the result of intestinal troubles.

James P. Murphy, secretary and treasurer of the Ontario Spinning Co., Philadelphia, died suddenly Thursday, September 28th. For the past seventeen years he had been secretary and treasurer of this company.

Wm. Emsley, of Wm. Emsley & Son, yarn manufacturers of Philadelphia, died after several weeks of illness. He was in his eighty-first year.

Col. Alfred M. Chadwick, assistant agent of the Tremont & Suffolk Mill, Lowell, Mass., died suddenly at the office of Dr. Leonard Huntress of that city, the cause of his death being heart disease. Mr. Chadwick had been in the employ of the Tremont & Suffolk Mill for the past thirty years. He was born in Exeter, N. H., December 12, 1855, and attended the public schools in that town until fifteen years of age, when he moved to Lowell and entered the employ of his uncle, Jacob Rogers, who is engaged in the hardware business. He is survived by a daughter, Miss Hazel Chadwick.

Charles F. Schadewald, connected with the Schadewald Mills of Philadelphia, died October 5th.

Joseph L. Whiton, for several years connected with Faulkner, Page & Company, commission merchants of New York and Boston, died at the age of 67 years. He entered the employ of this company when a boy and soon was made salesman. He was admitted to the firm in 1890 and retired from business in 1908. He is survived by a widow and two sons.

Jonathan Battye died at his home, 35 Green St., Woonsocket, R. I. He was born in Yorkshire, Eng., in 1835. Mr. Battye followed the woolen business for a number of years and held the position as overseer of weaving at what is now known as the Stanley Woolen Co., Uxbridge, Mass., when it was operated by the late Daniel W. Taft. He retired from the mill business some years ago and engaged in the grocery business. He is survived by a widow and two children.

George W. Card, who was agent of the Peabody Cotton Mills, Newburyport, Mass., several years ago, died recently at his home in North Dayton, Mass., at the age of 77 years.

Arthur E. Martin, at one time superintendent of the Acme Knitting Machine & Needle Co., Franklin, N. H., died at the home of his sister, Mrs. Harry J. Rockwood, Medford, Mass. He was born in Lowell, March 31, 1872, and is survived by one son and a daughter, his wife having died some years ago.

Daniel Fallain, overseer of weaving at the Armstrong Woolen Co., Detroit, Mich., and formerly manager of the Flint Woolen Mills, Flint, Mich., was instantly killed in a railroad accident recently going from Detroit to his home in Flint, Mich. Mr. Fallain was 54 years of age, married, and had been a resident of Philadelphia for many years. He was highly respected by all who knew him

Mill News

Those interested in receiving early and more complete investigated information of projected new mills, enlargements, improvements, fires, facts and gossip of the trade are referred to the TEXTILE ADVANCE NEWS, issued weekly by the publishers of the TEXTILE WORLD RECORD, at $15.00 per year.

COTTON.

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New Mills.

*Georgia, Atlanta. The Martel Mfg. Co. is reported incorporated at Albany, N. Y., with a capital of $200,000, by Louis W. Smith, of Freeport, N. Y.; Wm. W. Farrish, Montclair, N. J., and Isaac R. Stewart, New York City. This company it is understood will take over and operate the Elizabeth Cotton Mills here purchased by G. E. Huggins of the Farrish-Stafford Co., which company will sell the product of the mills.

*North Carolina, High Point. Most of the machinery for the new Pickett Cotton Mills is on hand, and it is now thought that the mills will be operation soon after the first of the year. Work on a number of new tenement houses will soon be started.

*Ohio, Carthage. The Union Thread Co., capitalized at $50,000, contemplates occupying their new mill at this place in December or about January 1st. Geo. A. Springmeier is president of this company and J. E. Allan, treasurer and buyer. Plant will be equipped with dye house and operated by steam power. They sell direct.

Pennsylvania, Lansdale. William T. Scott has leased a portion of the third floor of the building at 2d and Walnut Sts., in which he has installed one loom as a temporary equipment for a new plant which he will start up for the manufacture of Scotch carpets and rugs. Samples are now being made and five other looms will be installed at a later date. He is using 3/8 cotton yarn.

*Pennsylvania, Philadelphia. W. H. Godshall, Incorporated, has received a charter with a capital of $15,000. This company, which we recently mentioned as starting up at Mascher St. and Lehigh Ave., will manufacture tinsels, etc., and sell direct.

Pennsylvania, Philadelphia. Messrs. G. S. Lings & Co., cotton yarn dealers, have started a commission winding plant in the building occupied by them at D and Ontario Sts.

Pennsylvania, Philadelphia. Parties interested in the manufacture of embroideries have leased a building on 12th St., above Westmoreland, in which they will install the latest improved machinery for this class of work.

*South Carolina, Greenville. Construction work for the new Dunean Mills which began last May is expected to be completed by the latter part of December. The main mill building will be of two stories, 130 by 471 ft.; the building for the cloth room is also of two stories, 209 by 45 ft.; the weave shed is 408 ft. long by 209 ft. wide; there are three warehouses, each 100 by 50 ft., and a boiler house. The main building is of brick, with reinforced concrete floors, and the other buildings are of slow-burning mill construction. The Fiske-Carter Construction Co. has the contract. The company expects to start operations about March, 1912.

*Vermont, Brattleboro. The Fort Dummer Mills are making progress on the new buildings under construction. It is expected that the plant will be ready to start operations about Jan. 1, making fine combed goods, as has been previously reported. This plant will be equipped with 35,000 ring spindles and 648 looms, with electric power. They will sell the product direct.

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Enlargements and Improvements.

Connecticut, Middletown. It is reported that contract has been let for the erection of a three-story brick building, 52 by 78 feet, for weaving purposes, for the Russell Mfg. Co., manufacturers of elastic and non-elastic web of all kinds, cotton belting, etc.

*Connecticut, South Norwalk. Messrs. J. & J. Cash, Ltd., report that their new brick addition is practically a duplicate of the present quarters, and means that their plant is being doubly enlarged. Most of the new machinery will be imported from England, although the character of the product is not stated.

Georgia, Covington. The Covington Mills, manufacturers of sheetings, are reported as having started an addition of 5,000 spindles, with accompanying carding machinery, and have also added 150 new 44-inch Draper looms.

Georgia, Toccoa. It is reported that the Capps Cotton Mill are contemplating the construction of a dam to add to their water power, preparatory to the installation of electric drive in place of steam, motors for which have been ordered.

Georgia, West Point. The Lanett Cotton Mills are increasing the capacity of their plant by the installation of 208 automatic looms and other equipment. They are erecting a building for the cloth-room, and have purchased several inspecting machines, which will be installed when the structure is completed. The mills are running on a ten-hour schedule six days a week.

Massachusetts, Fall River. The Laurel Lake Mills are reported as negotiating for the purchase of a lot of land adjoining its property on the north on which buildings for storage purposes are eventually to be erected.

Massachusetts, Lowell. The brick tenement property of the Merrimack Mfg. Co. at 135-142 Colburn St. will be altered and used for storage purposes.

*Massachusetts, New Bedford. Knight C. Richmond, of Providence, is the architect, and the B. F. Smith Construction Co. has the contract for the

new weave shed for the Beacon Mfg. Co. This building will be 150 by 309 feet ,one story.

Massachusetts, New Bedford. The New Bedford Textile Co., textile bands, double and single loop bands, are reported as filing petition for a permit to erect a two-story addition to their mill.

Massachusetts, Shattuckville. The Massaemet Yarn Mills are erecting a 75-foot tower at the top of which a tank will be placed as a protection against fire.

Massachusetts, Westboro. Joseph S. Mason, narrow fabrics, tapes, etc., is replacing old looms with a shipment of new ones which have recently arrived.

*New Hampshire, Peterboro. The Union Mfg. Co.'s plant at this place, recently purchased by the Monadnock Mills of Claremont, will be absorbed and conducted at Claremont in the future. The Monadnock Mills recently increased their capital stock to $500,000 reducing the par value of shares from $1,000 to $100.

*North Carolina, Charlotte. The Fidelity Mfg. Co., reported in June to install looms for weaving cotton damask, advise us that they have 30 now in operation and will start 20 more shortly, making a total of 50 on this class of goods.

*North Carolina, Charlotte. The Chadwick-Hoskins Co. has completed erection of the new office building, 52 by 62 feet, one story, and are now occupying same. They have not made any addition to the plant.

*North Carolina, Cherryville. Referring to the issue of $30,000 of preferred stock of the Vivian Cotton Mills recently reported, it is stated that while this is to be issued, no enlargement will follow.

North Carolina, Cliffside. The Cliffside Mills are reported as contemplating the erection of a new mill building, an increase in power plant and other improvements. This is a $250,000 corporation, operating 40,000 ring spindles and 1,500 looms in the manufacture of staple ginghams, with dyeing, bleaching and finishing machinery.

North Carolina, Forest City. It is reported that the Florence Mills will install machinery for finishing chambrays, which have heretofore been finished in the North. The company manufactures sheetings, shirtings, drills, napped goods and yarns, on 15,000 ring spindles, 200 wide and 200 narrow looms.

*North Carolina, Franklinville. The Randolph Mfg. Co. has completed installation of 100 automatic and 100 plain looms.

*North Carolina, Hildebran. It is understood that the increase in capitalization by the Henry River Mfg. Co. recently reported will be applied to the cancellation of an indebtedness and future improvements in plant.

*North Carolina, Lowell. The power plant of the Spencer Mountain Mills, destroyed by lightning last summer, is being rebuilt and will be completed in about 30 days.

North Carolina, Morganton. The Alpine Cotton Mills have begun the construction of a brick warehouse for cotton storage to cost $3,000, employing their own force in the work. The company operates 11,000 ring spindles on weaving and ply yarns.

Pennsylvania, Philadelphia. James Bromiley, treasurer of the Eastlake Mfg. Co., manufacturers of upholstery fabrics and gimps, with 86 looms at Adams and Leiper Sts., Frankford, has placed contract for the erection of a 3-story and basement factory, 175 by 56 feet, at the corner of Leiper and Deal Sts., Frankford, at an estimated cost of $34,000.

*Pennsylvania, Philadelphia. The Ontario Spinning Co., whose mill on 2d St., above Columbia Ave., was recently damaged by fire, in addition to repairing the damaged portions of the plant are also installing an addition of 2,300 ring spindles to take the place of the mules damaged in the fire. It is their intention also to put in 15 combers within a short time. The plant, which is running full on cotton hosiery yarns, sold direct, is managed by W. T. Westerman.

Pennsylvania, Philadelphia. J. W. Barber & Co., Inc., Leverington Ave. and Baker St., Manayunk, operating 90 looms on upholstery goods, are replacing 10 old looms with new ones.

*Pennsylvania, Scranton. The Scranton Lace Curtain Company has been making extensive improvements to the plant. They have electrified the entire plant and added considerably more floor space. A new equipment has also been installed in the finishing department. The building has been raised and made as fireproof as possible, with reinforced concrete.

*South Carolina, Newry. Work is well advanced on the electric lighting system which the Courtenay Manufacturing Co. is installing in its village. As previously reported, this company has also installed a large filter plant, which is now in operation.

*South Carolina, Greenwood. At a meeting of the stockholders of the Panola Cotton Mill, it was voted to increase the capital stock by the addition of $110,000 of preferred stock, making the total capitalization $410,000. It is expected that this mill will probably start operations during November.

*Texas, Cuero. The office building for the Guadalupe Valley Cotton Mills is about completed and 14 cottages for operatives are well under way, and the mill itself, with its enlargements and improvements, is almost ready for operation. Seven thousand spindles and 160 looms will be operated on duck and heavy sheetings.

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Mills Starting Up.

Alabama, Eufaula. The Glenola Cotton Mills, fine shirtings and sheetings, have resumed operations, after a closed period during which many improvements have been made.

Alabama, Montgomery. The Montgomery Cordage Co. are reported as resuming operations after an idleness of some weeks, during which necessary repairs and improvements have been made. The company manufactures cotton twine on an equipment of 1,040 ring and 432 twisting spindles.

*Georgia, Atlanta. At the auction sale of the Elizabeth Cotton Mills, the property was purchased by G. E. Huggins of the Farrish-Stafford Co., $81,000 being the price named. Mr. Huggins states that he will begin operations at once. The plant, which has been in the hands of a receiver for some time, has an equipment of 11,000 spindles and 300 looms for the manufacture of fancy cotton goods.

Georgia, Gainesville. After a considerable period of idleness, it is reported that the Georgia Mfg. Co. is to resume operations. Preparations are being made to have the machinery cleaned and put in running order for the manufacture of yarns. There is an equipment of 3,000 ring spindles, run by steam.

Georgia, Macon. The mills of the Manchester Mfg. Co., manufacturing cotton yarns and twine, are running again, after being closed for some months.

Kentucky, Henderson. After being closed through the summer, the Henderson Cotton Mills, manufacturing brown sheetings on 47,900 ring spindles and 1,312 looms, have begun work.

*South Carolina, Camden. The Hermitage Cotton Mills, fine sheetings, have resumed operations. During the closed period extensive repairs and improvements were made, and it is said that the plant will run on full time from now on. Woodward, Baldwin & Co., New York, are selling agents for the product of 16,224 spindles and 390 looms.

South Carolina, Greenville. The Vardry Cotton Mills, closed some months ago on account of market conditions, have resumed the manufacture of 20s to 30s white and colored cotton yarns. The equipment of plant consists of 4,320 ring and 2,160 twisting spindles.

South Carolina, Bamberg. The Bamberg Cotton Mills Co., after a period of idleness, have resumed operations. There is an equipment of 10,752 ring and 1,024 twisting spindles and 248 looms in the plant, making 8/2 and 26/2 yarns and sheeting. The cloth is sold through Woodward, Baldwin & Co. of New York.

WOOLEN.

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New Mills.

Connecticut, Elmville. The Elmville Worsted Co. is reported incorporated with a capital stock of $50,000, by Frank E. Holden, of Woonsocket, president and treasurer, James H. Barnett, of Danielson, secretary and agent, and Harry E. Back, of Danielson. The report states that this company will operate the plant of the Thistle Worsted Co. in the manufacture of high grade worsteds and woolens. The equipment now in the mill is to be replaced later by more modern machinery.

*Massachusetts, Chapinville. It is understood that R. T. Whitaker & Co. is the name of the new concern which is to take over the property formerly known as the Northboro Woolen Mills, and that they will pick, garnett and card in the manufacture of shoddies of all kinds. Mr. Whittaker has been superintendent for W. S. Cordingley & Son, wool shoddy and extracts, at Newton Lower Falls.

Massachusetts, Jamesville. S. G. Hall, formerly proprietor of the S. G. Hall Mfg. Co., Camden, Me., has leased the Kent Woolen Mill, which has been idle for some time, and is making preparations to put the same in operation.

*Massachusetts, Lawrence. A number of looms are arriving each day at the new Uswoco Mills of the U. S. Worsted Co. and are being installed and tested as fast as received. Heads of departments are being selected and the office force organized. Some twelve hundred hands will be employed in this new and up-to-date plant when all machinery, electrically driven, is in position.

New Hampshire, West Swanzey. It is reported that H. W. Brown has resigned his position as agent of the Dexter Richards & Son's Co., Newport, and purchased the Granite Woolen Mills, which he will put in operation. These mills, equipped with 5 sets cards and 46 looms, for manufacturing men's wear and dress goods, have been idle for some time.

*Rhode Island, Bridgeton. The Premier Worsted Mills will start operations November 1st in the Inman Mill at this place, which they have leased and will operate in addition to their mill plant at Wickford. Fine fancy worsteds for men's wear will be made. Plant is equipped with 43 looms.

*Rhode Island, Westerly. Edgar Chase, reported some time ago as making experiments manufacturing shawls, etc., now operates 2 looms on shawls, rugs and porous towels. He sells direct.

*Washington, Ellensburg. Construction work on the buildings for the Washington Woolen Mill Co. will begin about Jan. 1, the plans calling for a building 200 by 65 feet, one story in height, to house the machinery, consisting of 3 sets of cards and 15 looms. Blankets will be a part of the product, and there will also be a factory building, 140 by 30 feet, for the manufacture of pants and shirts. About 75 hands will be employed at the start. Raw stock will be dyed and the product sold direct. Much of the machinery is being moved from the Western Woolen Mills, Topeka, Kans. J. F. McAfee, manager and buyer of the Washington company, was formerly with the Topeka plant.

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Enlargements and Improvements.

Connecticut, Talcottville. The Talcott Bros.' mill has recently added two sets of 60-inch cards, making an eight-set mill. They are running full time and putting in some new finishing machinery bought at the Rochdale auction.

*Indiana, Mishawaka. The new brick and concrete engine room of the Mishawaka Woolen Mfg. Co. has been completed and it is expected that the engines will be installed next week. With improvements in other parts of the plant, this represents an expenditure of about $75,000, and permit has just been issued to the company for further repairs to cost about $6,000.

*Maine, Springvale. New equipment in the addition at the Springvale Spinning Co. will consist of cone reducers and speeders to replace old type drawing machines, one new set of drawing with cone reducers and speeders, six cap spinning frames of 200 spindles, two of 160 spindles and three cap trap twisters of 200 spindles. Winding, spinning and twisting machinery will be run by individual motors, and the remainder of the machinery by group drives. The product is sold by Percy A. Legge of Boston and Philadelphia.

Maine, Waterville. The Wyandotte Worsted Co., makers of woolens and worsteds for men's and women's wear, are adding new equipment. A new steam drier and one new card have already been installed.

*Massachusetts, City Mills. The City Mills Woolen Co. are now located in their new mill, replacing plant destroyed by fire last December. They manufacture shoddy in addition to commission work. Plant is equipped with 5 cards and 3 pickers.

Massachusetts, Haverhill. M. T. Stevens & Sons Co. are having plans and specifications prepared by Chas. T. Main, of Boston, for a new one-story dye house, of mill construction, 130 by 72 feet, for their Pentucket Mills.

Massachusetts, Hinsdale. The Hinsdale Woolen Mills are replacing the old steam boilers with two new 150 h. p. boilers. The work will be done so that no shutdown will be necessary.

Massachusetts, Lawrence. The Ayer Mill has voted to increase the capital stock from $100,000 to $1,000,000, 5,000 shares of this increased stock to be sold for cash at par to the American Woolen Co. and the balance to be held for future disposition.

Massachusetts, Lowell. The Bigelow Carpet Co. has been granted a permit for the erection of a chimney, 200 ft. in height, the estimated cost of the work to be in the neighborhood of $7,500.

*Massachusetts, Uxbridge. The Stanley Woolen Co. are installing in their Calumet Mill two new turbine water wheels which will add 250 h. p. to the capacity of their steam plant.

Michigan, Eaton Rapids. The Eaton Rapids Woolen Mills, wool and merino knitting and weaving yarns, are reported as erecting a building, of one-story fireproof construction, for the dyeing, bleaching and drying departments.

*New Hampshire, Tilton. The Tilton Mills advise us that the 300 h. p. steam plant reported last week is being installed by the Tilton Electric Light & Power Co. instead of by them, and that their new addition, which is in course of erection, is to be of brick and wood, concrete construction not being used.

*Rhode Island, Woonsocket. The new brick addition under way for the Alsace Worsted Co. is to be used mostly for storage purposes.

Vermont, Winooski. Besides the large new chimney which is being erected for the Burlington Mills of the American Woolen Co., a new boiler room for a battery of ten boilers is being built and another story added to the old machine shop. When this work is completed, a new filtration plant will be started.

Wisconsin, Jefferson. It is reported that John E. Owen & Son, spinners of woolen and merino yarns on one set and 480 spindles, have ordered a knitting machine, for manufacturing tubing for wrist bands on cotton gloves. It is expected that the installation of this machine will be followed by others.

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Mills Starting Up.

Georgia, Rossville. The Park Woolen Mills of the American Textile Woolen Co. of Sweetwater, Tenn., have resumed with about half the complete force, after a shutdown of some time. Plant and machinery were overhauled and put in good condition during idleness.

*Maine, Dexter. Charles and Edward Greenwood, of Corinna, reported last spring as having purchased the 4-set woolen mill of the Abbott & Latimer Co., have taken possession and will operate it in the future. The mill is equipped with 20 broad looms and dyeing and finishing machinery and when running to full capacity employs some 30 hands.

Vermont, Northfield. After a shutdown of several weeks, the mills of Chas. M. Davis & Co., white flannels, have resumed with prospects of steady business for the next twelve months.

KNIT.

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New Mills.

*Canada, Ontario, London. The Holeproof Hosiery Co. of Canada, Ltd., has been formed with a capital stock of $50,000 to operate the new plant here of the Holeproof Hosiery Co. of Milwaukee, with Carl Freschl, president; E. S. Little, treasurer, and L. Heilbronner, superintendent and buyer. Production will begin about Dec. 1, on 30 knitting and 1 sewing machine, operated by electricity. Piece dyeing will be done and the product sold direct. About 25 will be employed.

*Canada, Ontario, Woodstock. The Ken Knit Company which is erecting a new mill at this place, proposes having same ready to start operations January, 1912. This company, which is capitalized at $100,000, will manufacture sweater coats, ladies', men's and children's; neckties and scarfs, operating 15 knitting and 10 sewing machines. Electricity will be motive power. K. Harvey is superintendent of the mill.

*Maryland, Thurmont. The "Thurmont Branch" of the Union Mfg. Co. will begin operations

about Nov. 1, manufacturing hosiery. Plant will be equipped with 50 knitting machines and operated by electricity. About 25 will be employed in the new mill.

*Massachusetts, Douglas. It is understood that the new knitting concern to be established here, in connection with which the name of Ernest A. Wye of Needham was mentioned in last issue, will be known as the Tallyho Knitting Co. Mr. Wye will act as manager. Steps will soon be taken to incorporate the company with a capital of $20,000. Indications are that they will be in operation within a comparatively short time.

*Massachusetts, Lynn. The Bay State Hosiery Co., reported incorporated during the summer, is not manufacturing at present.

New York, New York City. The Bruce Pleating Co., 200 West 23d St., have equipped a plant with knitting machinery on which they are manufacturing a line of silk knitted neckties and selling direct.

New York, New York. The Krosknit Manufacturing Co., with A. C. Kross, as manager, are operating a number of machines at 179 E. 116th St., on seamless cotton and woolen hosiery which they sell direct.

*New York, Oswego. Jas. A. Shufelt, previously reported as interested in forming a company to operate a plant at this place for making men's union suits, advises us that he has concluded to wait until spring to start business.

*North Carolina, Robersonville. The Robersonville Hosiery & Mfg. Co. has not yet installed machinery in the plant. Building has been erected but no further progress made. They are interested in securing some one to furnish some capital and take charge of the plant.

*Pennsylvania, Bangor. The Bangor Silk Knitting Company, capitalized at $5,000, started operations in their new plant Oct. 1, making ladies', men's and misses' silk hosiery. The plant is equipped with 11 knitting and 3 sewing machines. Product is sold through Auffmordt & Co., 33 Greene St., New York, N. Y. Henry Berendsen is president and treasurer of the company.

*Pennsylvania, Manheim. The Hygrade Hosiery Mfg. Co. is the name of a concern which has taken over the plant of Ed. P. Jones at Bristol, Tenn., and removed it to this place, occupying quarters at Granby and Wolf Sts. About 60 hands will be employed in the manufacture of high grade cotton and silk hosiery for men and women. Plant is equipped with 70 knitting machines and 5 sewing machines. Mr. Jones is superintendent and buyer.

Pennsylvania, Philadelphia. Sheple & Sabul, 534-36 N. 3d St., manufacturers of upholstery and dress trimmings, have installed 15 knitting machines on which they are making high grade silk neckties and selling direct.

Pennsylvania, Philadelphia. The Federal Knitting Company is reported as having started up at Ontario and Lawrence Sts., where they will install machinery for the manufacture of high grade silk neckties and sell direct.

Pennsylvania, Philadelphia. The Pioneer Knitting Mills, recently incorporated with a capital of $10,000, have started business at 134-36 Market St., with Louis I. Bellows, president and treasurer, and I. Warshwer, superintendent. The plant contains 40 knitters and 4 sewing machines which they are operating on high grade silk neckties, selling direct. They are using Tram, Tussah, Irg. Gloss and artificial silk and 20, 40 and 60 mercerized yarn. The plant at the present time is running to its fullest capacity with the prospect of additional machines being installed at an early date.

Pennsylvania, Pottstown. The equipment for a new mill operating on women's ribbed vests, has been ordered by a concern to operate under the name of the Pottstown Garment Co., with a Mr. Brendlinger interested.

Pennsylvania, South Bethlehem. The South Bethlehem Knitting Mills with a capital of $10,000, has been granted a charter. This concern will operate the plant formerly run by George Dobbins and which was recently purchased at public auction by parties in this town for the purpose of starting it up again. Mr. Dobbins, it is said, will be the manager. The plant contains 275 knitters and 55 loopers which were formerly operated on children's and infants' cotton hosiery.

*Virginia, Suffolk. The Carr Knitting Mills, which started operations in August in their new plant, making hosiery, have not yet settled on a selling agent and are disposing of goods direct. This company is capitalized at $50,000. G. L. Bell is president of the company; P. G. Everett, treasurer, and J. O. Carr, manager and buyer. They use 44/2, 36/2, 80/2, 40/1, 24/1 and 60/1 yarn. About 30 people are employed.

Pennsylvania, Reading. A. J. W. Baker is treasurer of the Marathon Hosiery Company, operating plant at this place, making ladies' mercerized and lisle seamless hosiery. This plant is equipped with 50 knitters, 8 loopers and 7 sewing machines, with electric power. Goods are sold direct. They use 20s to 80s yarns.

Rhode Island, Warren. Ainsworth & Sons is the name of a new concern that has recently started business at 31 Market St., knitting men's hosiery. They have eight Excelsior and four Lamb machines and are buying 4-ply woolen and 10s to 16s cotton yarns. The goods are sold direct.

*Virginia, Williamsburg. It is reported that C. C. Groat, the new proprietor of the Williamsburg Knitting Mills, will soon award contracts for the erection of two additional brick buildings. The production is to be men's fleece lined and ribbed underwear.

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Enlargements and Improvements.

Illinois, Chicago. Notice has been filed of increase in the capital stock of the Earnshaw Knitting Co., from $24,000 to $50,000. The company manufactures cotton, mercerized, merino and

worsted underwear for women and children, on ten knitting and twenty sewing machines, selling direct.

*Massachusetts, Great Barrington. The Reliable Knitting Co. are adding 50 Mayo model B knitting machines, 6 new ribbers and 5 new loopers to their equipment.

Massachusetts, Lowell. For the purpose of securing new working capital, it is proposed by the directors of the Shaw Stocking Co. to reduce the capital stock of the company from $540,000 to $180,000, and then to issue $270,000 of new stock at par. The company was organized in 1877, with an original capitalization of $30,000. Last year a new mill and a number of boarding houses were built, which converted a good deal of liquid capital into fixed assets.

*Michigan, Grand Rapids. Changes at the Swiss-American Knitting Mills, Front and Allen Sts., will double the capacity of the knitting and bleaching departments and the washing and finishing rooms, as previously reported. The company has patented an elastic closed crotch union suit, which is meeting with favor in the trade, and they expect to double their sales on this garment alone. Ten new knitting machines will be added. J. H. Goodspeed is president of the company; S. A. Morman, treasurer; W. N. McNelly, superintendent. A. E. Clarke, vice-president and manager, does the buying.

New Jersey, New Brunswick. An additional story is being put on the mill of the Norfolk & New Brunswick Hosiery Co. The company manufactures all kinds of knit goods for men, women and children, on an equipment of 29 sets of woolen cards, 400 knitting and 150 sewing machines.

*New York, New Hartford. The Olympian Knit Goods Co., which completed the erection of an addition of two stories to their mill during the summer, now has a total equipment of 75 knitting and 60 sewing machines. They manufacture ladies' underwear, selling direct.

New York, Oswego. Thomas J., Neil J. and Ella A. Hayes are named as the parties who will take over the property of the Oswego Knitting Co. to operate it under the name of the Hayes Knitting Co. A company has been formed with a capital of $30,000, of which the above named are directors. It is said that both hosiery and underwear will be made. Thomas J. Hayes was formerly president and treasurer of the Oswego Knitting Co.

*New York, Perry. The new picker house being erected by the Perry Knitting Co. will be of reinforced concrete, 95 by 109 feet, of one story and basement. This will house the pickers, lappers and garnetts, and will also contain the mixing rooms. During the past summer the company has built a new dry house of reinforced concrete, in which new vertical drying machines have been installed.

*New York, Saratoga Springs. The Olmstead Mfg. Co. has enlarged the factory during the past year to nearly double the former size. They have put in 3 new power machines, 2 over edging machines, 3 sewing machines and 2 special hand knitters. This plant is run on slipper contracts.

*New York, Watertown. The Shaughnessy Knitting Co. is reported as installing new machinery in preparation for a busy lightweight season which they expect on spring and summer orders.

North Carolina, Flat Rock. Improvements at the plant of the Skyland Hosiery Co. include a new office building, just completed, and an automatic sprinkler system which is being installed. Women's seamless cotton and lisle hosiery is the product, sold direct. Company operates 200 knitting machines, 50 ribbers, 40 loopers and 3 sewing machines.

*Ohio, Cleveland. The Green-Daas Schwartz Co. has completed an addition to their mill and installed 10 new looms and 25 additional knitting machines.

*Ohio, Piqua. According to the terms of the contract, the new building for the Piqua Hosiery Co. is to be completed March 1, 1912. The present quarters will be connected with the new building when completed and used as a warehouse.

Pennsylvania, Doylestown. The plant of the H. L. Scheetz Co., which has been shut down for several days, has been started up again. The production of the mill consists of children's hosiery and men's half hose, 36 and 50 gauge, with 17 knitters, 22 ribbers and 7 loopers. There is a prospect that the plant will be reequipped in the near future with machines for making finer gauge goods. The production is sold through John M. Given of New York.

*Pennsylvania, Harrisburg. The Idea Hosiery Co., which has been incorporated with capital stock of $100,000, will take over the interest of the Well Knit Hosiery Co., which has been operating a plant at this place, making men's and women's seamless hosiery. A new building is under construction and as soon as completed and equipped the company will start operations in same. Steam and electric will be the motive power. W. G. Starry is president of the new company, John H. Landis, treasurer, and R. I. Passell, superintendent. The product of the plant will be sold direct.

Pennsylvania, Lykens. The Estate of John R. Fisher, which has been operating on a line of seamless 176-needle half hose of cotton, have recently added a new line of ladies' silk hosiery, 240-needle goods, and now run on both silk and cotton goods. Their equipment consists of 66 knitters, 18 embroidery machines, 12 ribbers and 12 loopers, buying cotton yarns 12s to 100s and selling through Chicago.

Pennsylvania, Lykens. The Lykens Knitting and Manufacturing Co., of which Walter Duncan is the president and superintendent, and R. Coble, treasurer, are quite busy on seamless half hose and ladies' cotton hosiery, 200-needle goods. Their equipment has been increased to 50 latch needle knitters and 30 spring needle machines, 22 sewing machines and 10 loopers. Production is sold through E. B. Crane, New York.

*Pennsylvania, Manchester. The Manchester Hosiery Mills Co., capital stock of $10,000, have made an enlargement to the plant, formerly known as the Manchester Hosiery Mills, and installed 10 new knitting machines. This plant is now equipped with 20 knitting and 1 sewing machines for making ladies' hose, 200 needle (registered Trade Mark—"Mahomi Maid"). They use 20s and 36s combed Peeler yarns. Dr. J. C. May is president of the company; R. J. Hilliker, treasurer, and Chas. J. Sutphen, superintendent. Goods are sold through Gallagher, Merryman & Co.

*Pennsylvania, Philadelphia. The Progressive Knitting Mills, who commenced their operations several months ago at Mascher and Lehigh Ave., on account of obtaining better facilities in the way of help and floor space, have removed their plant to Spring City, Pa., where they have taken over the building in which was formerly located the National Und. Co. They have secured the services of George R. Mattis, formerly employed by the National Und. Co., to act as their general manager and superintendent. They are manufacturers of ladies', misses' and children's ribbed vests and union suits of cotton and mercerized yarns. The equipment of the plant has been increased to 30 knitters and will be further increased as business warrants. They are busily engaged selling their production through J. W. B. Carson, 444 Bourse Bldg. The office of the company will remain at 122 N. 3d St., Philadelphia.

Pennsylvania, Philadelphia. The Alberta Knitting Mills of which S. M. Witz is the proprietor and now located at 405-7 Market St., has leased a portion of the old Leicester-Continental Mills at Lena and Armat Sts., Germantown, into which the plant will be removed around the first of the coming year. The plant contains 30 flat and 6 round knitting machines and 16 sewing machines, which are operated on sweaters, cardigan jackets, bathing suits and fancy knit goods which they sell direct.

Pennsylvania, Philadelphia. The Indian Braid & Lace Works, of which Rosenau, Frankel & Co. are the proprietors, and located at Indiana Ave. and A St., report that they are exceedingly busy on braids and laces for the underwear trade. They have recently enlarged their plant by an addition of 15 new knitting looms and 100 braiders, with the prospect of further enlargements to be made in the future.

Pennsylvania, Philadelphia. The Triangle Hosiery Mills have removed their plant from their old location at Mascher and Oxford Sts., to the Leicester & Continental Mills, Lena and Armat Sts., Germantown, where they have leased a large portion of the building. They are manufacturers of seamless half hose, women's seamless and children's lisle hosiery, 200 and 240 needle goods, selling direct and operating one of the largest plants in this city.

Pennsylvania, Philadelphia. John E. Pike has removed his plant from 106 W. Norris St., to the third floor of the building on Howard St., below Lehigh Ave., where more room has been secured and the plant enlarged. He is manufacturing athletic hose, sweaters, sweater coats and high grade silk neckties, which he sells direct.

Pennsylvania, Pottsville. The S. A. Barket Knitting Mills at 401 Minersville St., are busy on 84-needle seamless half hose, operating 15 knitters and 3 loopers, buying 6s to 8s yarns on cones and selling direct. Additional machines to the number of 15 are to be purchased, installed and put in operation at once.

Pennsylvania, Pottsville. Donohue's Knitting Mills, 701 No. Second St., have been greatly enlarged during the past year. Additions of frame have been built, one 16 by 40 feet and another 10 by 20 feet, both of 2 stories, and 3 new body frames have been put in, also 2 ribbers, with additional body frames to be ordered. They are quite busy on ladies', children's and misses' cotton ribbed underwear, and are now arranging for the starting of a new line of children's wrappers. The production is sold through W. H. Shelp and Clift & Goodrich, New York.

*Pennsylvania, Reading. S. S. Miller is occupying his new building at 118-120 North 3d St., which is of mill construction, 2 stories and basement, with floor space 150 by 36 feet. The knitting machinery, driven entirely by electricity, is installed on the top floor, the first floor being devoted to the packing and shipping departments and offices, with the pressing and finishing departments in the basement. Gallagher, Merryman & Co., New York and Chicago, are selling agents for the product, "Rellim-made" hosiery.

*Pennsylvania, Reading. The Gehrke Knitting Mills, reported building an addition to their plant and to install new machinery, have a total equipment of 100 knitting machines, on 200 and 240 needle hosiery. This mill is now located at Locust and Perry Sts., having removed from 5th and Court Sts. Product of the plant is sold direct.

*Pennsylvania, Reading. The Berkshire Knitting Mills advise us that although they are contemplating the erection of a new dye house this fall, work has not yet been started on same. They propose erecting a plant strictly up-to-date and are considering thoroughly all the details before starting.

Pennsylvania, Schuylkill Haven. D. D. Coldren has increased its equipment to 24 knitters, 8 sleevers and 32 sewing machines, which he is operating on women's and children's cotton ribbed underwear, selling through New York.

*Pennsylvania, Scranton. The officers of the reorganized Scranton Textile Co. are O. S. Johnson, president; C. S. Woolworth, vice-president, and W. H. Logan, secretary and treasurer. Thos. F. Trimble is general superintendent. The working force has been secured and new machinery installed. Cotton and wool underwear and sweaters will be the product, with an ultimate output of 1,200 dozen garments a day.

*Pennsylvania, Strausstown. Herbein & Anthony, previously reported as to install additional knitting machines, now operate a total of 34 knitting and 6 looping machines on half hose.

Pennsylvania, Wiconisco. I. Mossop & Co., who have been operating the Wiconisco Hosiery Mills on men's seamless hosiery of cotton, have also added a line of fine silk goods. Their equipment consists of 120 knitters and 24 sewing machines; production is sold through Philadelphia and New York.

Rhode Island, Pawtucket. The Pawtucket Hosiery Co., occupying quarters in the Hemphill Mfg. Co.'s plant, which is being enlarged, will install additional machinery, to meet their increased business.

Rhode Island, Warren. The Standard Specialty Mills are putting in some braiders. Business is good at this plant, which has recently changed superintendents, Mr. Fraser succeeding D. D. Burgess.

*Virginia, Suffolk. Operations have been resumed in the Suffolk Knitting Mills, which have been rebuilt. About 200 people are now employed.

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Mills Starting Up.

Pennsylvania, Schuylkill Haven. Albert H. Kline, proprietor of the Standard Knitting Mill, whose plant is now shut down, contemplates starting up again in a few weeks. He is manufacturing women's ribbed underwear of cotton on 16 knitters and 12 sewing machines, selling direct and through agents.

Pennsylvania, Schuylkill Haven. Berger Bros., whose Spring Garden Underwear Mill has been shut down for several weeks, are making repairs to the equipment of their bleachery, as well as other portions of their plant, with the expectation of starting up within a week or two. They manufacture women's and children's cotton ribbed underwear on 46 knitters and 40 sewing machines, bleach their product and sell through Clift & Goodrich, New York.

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Mills Shutting Down.

Pennsylvania, Avon. It is reported that the Avon Knitting Mills, which have been shut down for several months past, will not be started up again. Several attempts have been made to sell the plant but without avail. The plant contains 30 knitters and 8 ribbers which were operated on seamless half hose, 188-needle goods.

*Pennsylvania, Lancaster. The business of the Lancaster Knitting Co. has been discontinued. The plant has been sold and the machinery removed. This company made an assignment last April for the benefit of its creditors.

*Wisconsin, Appleton. The Telulah Knitting Co. will not resume operations. The plant was destroyed by fire in September.

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Personals.

Arthur S. Jessup has accepted the position as overseer of knitting at the James J. Regan Mfg. Co., Rockville, Conn.

Max Lieberman has accepted the position as superintendent of the Chambersburg Hosiery Co., Chambersburg, Pa. He comes from Philadelphia.

George A. Morgan has been appointed superintendent of the Harder Mfg. Co., Valatie, N. Y. He comes from Piqua, Ohio.

A. C. Marsh has accepted the position as superintendent of the Penman's Ltd., Paris, Ont. He was formerly employed at the Taunton Knitting Co., Taunton, Mass.

SILK.

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New Mills.

New Jersey, Paterson. The Excello Silk Co., which started operations here in July, operates 7 looms, on ribbons and hat bands. This company is capitalized at $20,000, with Daniel Patrick, president and superintendent and Harry T. Johnson, treasurer. They sell through McDonald & Derringer, 53 Greene St., New York.

New Jersey, Paterson. The Atlantic Silk Co. is a new concern recently established in the mill at 22 Paterson St. They manufacture broad silks, operating ten looms.

*New Jersey, Plainfield. It is reported 75 looms in the new plant of the T. J. Mitchell Co., manufacturers of broad silks, will be started at once, employing about 100 hands, the number to be increased later.

New York, New York City. The American Silk Co., whose failure several years ago was attended with much litigation, is to be reorganized under the name of the Arlington Textile Corporation. A strong syndicate is back of the new plan. A new bond issue of $2,000,000 will be issued at once, and the authorized capital stock will be $2,500,000, all common. The mills controlled by the company are the two Clifton mills at Weehawken, N. J., and the mills which formerly belonged to the York Silk Mfg. Co., namely, the York, Monarch, Diamond and Windsor at York, Pa., the Carlisle at Carlisle, Pa., and the Middletown at Middletown, Conn. This gives the new corporation eight mills, with about 1,700 looms, two throwing plants and a finishing plant.

*Pennsylvania, Catasauqua. Work has been about completed on the new building for the Catasauqua Silk Co., and it is expected that operations will be started in about four weeks. This company, capitalized at $15,000, will manufacture broad silks. They will use electric power. James J. Seigfried is president of the company; Wilson J. Smith, treasurer; E. J. Smith, agent and buyer, and F. J. Schleicher, superintendent.

*Pennsylvania, Emaus. Broad silks will be the product of 255 looms operated by the Excelsior Silk Co., recently reported incorporated. This company purchased the plant of the Keystone Silk Mills. Product will be sold through Ulrich & Donaldson, New York.

*Pennsylvania, Freeland. The Washington Silk Co. has started operations in their new mill on Ridge St., making silk goods. The plant is equipped with 50 looms and electric power. This company is capitalized at $35,000, with W. E. Mar-

tin, president; B. F. Davis, treasurer, and Gustave H. Repers, general manager. The product is sold through Strauss & Schlichting, New York.

*Pennsylvania, Hawley. Nino Bros. Throwing Co., reported in August as to open a silk throwing mill here, state that business conditions have delayed them and that they are not yet ready to begin operations.

Pennsylvania, Philadelphia. The Joynes-Campbell Co., who recently received a charter, said to be capitalized at $500,000, have leased a portion of the building at 123 and 125 N. 4th St., where they installed machinery for the manufacture of silk braids and tassels.

*Pennsylvania, Scranton. A. Mottershead is superintendent and buyer of the South Scranton Throwing Co., operating a plant of 10,000 spindles at this place.

Virginia, Richmond. According to report, charter will be asked for on Oct. 12 for the Virginia Silk Ribbon Corporation, capitalized at $250,000. Hugh L. Kirby, of Harper's Ferry, W. Va., and W. S. Wortham, of Richmond, are named as promoting the company, which will build a plant in this city employing 250 hands in the manufacture of a taffeta silk ribbon possessed of exceptional wearing qualities.

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Enlargements and Improvements.

Illinois, Chicago. At the annual meeting of the Zeglen Bullet Proof Cloth Co., it was decided to increase the capital stock of the company from $100,000 to $125,000. It is stated that the headquarters of the concern will be moved to South Bend, Ind.

New Jersey, Paterson. The Crescent Broad Silk Mfg. Co., now operating 80 broad looms in the Strange Mill on silk dress goods, will add 16 new looms within a few weeks.

*New Jersey, Paterson. Wishmack & Hollritt, manufacturers of broad silks, will operate 26 looms in their new quarters in the Harmony Mill, production beginning at once. Sell direct.

New Jersey, Paterson. Peir & Bornstein, broad silks, have leased space in the new Ward St. Mill, and the annex, recently purchased at receiver's sale and formerly known as the High Grade Silk Co., is being moved into the new quarters. Later the equipment at 130 Broadway will be moved. No increase in machinery is looked for at present.

New Jersey, Paterson. George Deiss has started an annex in the Schutz Mill for the manufacture of hat bands.

New Jersey, Paterson. The Universal Weaving Co., 112 Straight St., has started to build a new boiler house. This will enable them to increase their finishing department, and later on an additional story will be added. Seven new ribbon looms are being added at the present time.

New York, Andover. It is reported that the mills of the Rochambeau Silk Co. have been purchased by A. Godde, Bedin & Co., silk manufacturers of France, who have a shipment of some 30 French looms on the way which will be installed here. The Rochambeau plant has an equipment of 68 looms, operated by electricity, for the manufacture of broad silks.

*New York, Binghamton. The four concrete walls of the new one-story building for the J. & D. D. Miller Co., at Ely and Frederick Sts., are partly up and the floor is being laid. In the new location it is expected that the capacity of the plant will be more than doubled.

*New York, Schenectady. The Mohawk Silk Fabric Co.'s branch plant at this place will operate 125 to 150 sewing machines on silk gloves and underwear. C. R. Morley is manager.

*Pennsylvania, Mt. Carmel. The Mt. Carmel Silk Mfg. Co., which started operation last October, and which was reported later to install additional machinery, now has 60 looms running on taffetas and messalines. This company is capitalized at $25,000. Jno. A. West is president of the company; Wm. H. Shindel, treasurer, and E. E. Elwood, buyer. They sell their product direct.

*Pennsylvania, North Wales. The new addition to Chas. Stringer's spun silk yarn plant has been completed and equipped with new machinery, which will be in full operation next month.

Pennsylvania, Philadelphia. S. H. Downs has removed his commission silk winding and spooling plant from the building at Jasper and York Sts. to 1917 Adams St.

Pennsylvania, Quakertown. The Quakertown Silk Co., broad silks, are adding 20 looms to their plant here.

Pennsylvania, Scranton. It is reported that the W. A. Lush Silk Co. has leased the silk yarn mill of the Providence Silk Co. The Lush company operates a 12,000-spindle throwing plant on Clearfield St. and also a 10,000-spindle mill at Taylor, Pa. It is understood to be their intention to start operations in the new acquired quarters at once.

*Pennsylvania, South Bethlehem. The Progressive Silk Co. have removed from Paterson, N. J., to their new quarters here, and it is said that more machinery will be added as soon as they have the present equipment installed and running.

Pennsylvania, Wilkesbarre. The Leon-Ferenbach Silk Co., silk throwing, are reported as planning improvements to cost in the neighborhood of $20,000, including the erection of a three-story brick addition, 48 by 118 feet.

Pennsylvania, York. Messrs. E. & H. Levy, who have recently established a silk ribbon factory here, are reported as contemplating the erection of an additional plant in the spring.

*Rhode Island, Pawtucket. The Glencairn Mfg. Co. has increased the capacity of their plant by the installation of 50 German braiders in the part of the building formerly occupied by the Pawtucket Warp Co. This company manufactures silk shoe laces.

Mills Shutting Down.

Massachusetts, New Bedford. The plant of the Crescent Mfg. Co., staple and fancy broad silk and cotton mixtures, is closed for a short time pending the decision as to what style of goods will be required for the spring trade. It is not thought that the curtailment will be longer than two or three weeks.

New Jersey, Paterson. The Parkside Silk Co., East 33d St. near 19th Ave., have closed their plant owing to dullness in the trade. Broad silk dress goods are manufactured on 24 looms.

Pennsylvania, Allentown. Owing to a scarcity of orders, the Allentown Silk Co. is reported closed for an indefinite period. Silk ribbons are manufactured, and over production and lack of demand for this class of goods has caused the company to believe that a shutdown would improve business. About 400 are employed.

MISCELLANEOUS.

*New Jersey, Newton. Herbert Bentley is to be general superintendent of the Sussex Print Works, reported incorporated in last issue with a capital of $150,000. The company expects to begin operations within three or four weeks.

*New York, Long Island, Hewlett. The Hewlett Embroidery Works, which have been incorporated with capital stock of $80,000, will begin production of goods October 25th, making Swiss embroideries and lace. Albert Brennwald is president of the company and Henry Ruppert, secretary and treasurer. Plant will be equipped with electric power. Product will be sold direct.

New York, New York. The Knebel Textile Co., which operated a small plant at 334 Bowery, on embossing and printing textile fabrics, have given up business.

Pennsylvania, Philadelphia. The Phoenix Dye Works, located on Witte St., below Clearfield St., dyers, printers and finishers of hosiery, in addition to making many changes and enlargements at their plant have recently fitted up a new department in which they are dyeing fast blacks and colors on silk hosiery. A department for the bleaching of silk hosiery under the peroxide system has also been installed. They are quite busy in all departments of the plant.

Pennsylvania, Philadelphia. The plant of the San-Knit-Ary Bleachery, located at 2622 N. Front St., was recently sold out at public auction, its former owners deciding to retire from that business. The plant, equipped for dyeing and bleaching hosiery and underwear, yarns and cotton goods, had a capacity of several thousand pounds per week.

Pennsylvania, Philadelphia. A portion of the dye works of the Karl Schlatter Dye Works, located at Hartwell and Ontario Sts., in which they dyed hosiery and yarns, was recently damaged to the extent of $2,000 by fire. The building will be repaired at once.

Pennsylvania, Wiconisco. The Wiconisco Dyeing Co., which has been making a specialty of dyeing blacks on cotton hosiery, have recently changed over their plant in which they are now dyeing both cotton and silk goods in colors and fast blacks, both developed and oxydized, with a capacity of 2,500 lbs. per day.

*Rhode Island, Bradford. (Niantic). D. H. Thornton, president of the Bradford Dyers' Association, of Bradford, England, whose large branch plant here is under construction, is here on a visit of inspection, making his headquarters at the Crown Hotel, Providence. He is accompanied by W. H. Thornton, his son, and Wilfred Ward, the latter being slated as the resident director and treasurer in this country when the plant is put in operation. They expect to be here a short time only, and will return again in February, by which time it is expected the plant will be ready to start up.

Rhode Island, Providence. The Franklin Process Co. are now established in their plant at 291 Promenade St., formerly the Laureldale Dye Works, and have started dyeing by the Franklin process of dyeing yarn in the cone or package instead of in warp or skein. This process has already been successfully employed in mill use and a number of machines have been installed in manufacturing establishments. John C. Hebden is vice-president and general manager of the company; E. S. Graves, assistant manager; Lewis Milner, treasurer, and A. I. Harvey and H. L. Leeson, of the Universal Winding Co., are on the board of directors. The company is incorporated under Rhode Island laws with a capital of $300,000. About 100 hands are now employed.

Rhode Island, Woonsocket. The Friedrichs Dyeing Co., First Ave. and Fairmount St., has been practically destroyed by fire. They were running night and day and it is thought probable that the company will build and equip another plant. Woolen, worsted and cotton yarns, worsted tops, etc., were dyed. The loss is placed at $50,000.

FAILURES AND SUSPENSIONS.

New Jersey, Paterson. Receivers have been appointed for the Collinge & Nolan Co., operating 75 looms on ribbons and novelties, following a meeting of a majority of the firm's creditors, it not being considered advisable to grant further extensions. Slackness in the ribbon branch of the silk industry is given as the cause for the firm's reverses. Considerable silk stock is on hand, and it is said that the receivers will complete the work on the looms.

FIRES.

Delaware, Wilmington. Fire at the plant of the Glen Hosiery Co., mfrs. of men's and women's seamless hosiery, caused damage estimated at $1,000. The company operates 190 knitting machines, 18 ribbers and 72 sewing machines, with dyeing and finishing machinery.

Massachusetts, Worcester. Fire did damage estimated at from $50,000 to $100,000 at the plant

of the Worcester Bleach & Dye Works. The company does a general bleaching and dyeing business, and on that account and from the fact that the stock on hand was largely the property of outside manufacturers, no close estimate of the damage can be made at this time. It is said that plans for rebuilding will be started at once.

New Jersey, Weehawken. The plant of Robert Reiners, builders of embroidery machines, has been destroyed by fire, the loss being estimated at $100,000.

Pennsylvania, Philadelphia. A fire which started in the rear building of the Ontario Mills, on the top floor, 2d and Columbia Ave., is reported as damaging the plants of the tenants housed in the building to the extent of $15,000. The damaged portion of the building is being repaired and operations are being conducted as heretofore.

FACTS AND GOSSIP.

California, San Diego. Application for dissolution as a corporation has been filed on behalf of the California Silk Co., the same stating that at a meeting of a majority of the stockholders it was voted to dissolve. The company has not been doing business for some time.

Connecticut, South Norwalk. The dissolution has been announced, under date of October 1, of the firm of Boese & Peppard, embroidery manufacturers, Mr. Boese to continue his share of the business under the firm name of Edwin Boese & Co., and Mr. Peppard to independently conduct a similar business.

Connecticut, Stafford Springs. The Rhode Island Worsted Co.'s mill is running full time, and the weave room is on a night schedule. James Sheppard is superintendent of this mill.

Connecticut, Stafford Springs. The Warren Woolen Co. is running full time and starting some looms that have been idle for several years to fill their orders on fine fancy cassimeres.

Connecticut, Willimantic. The Quidnick-Windham Mfg. Co., which company is a consolidation of the Windham Mfg. Co. of Willimantic and the Quidnick Mfg. Co. of Coventry, R. I., are now operating on a full time schedule, employing about 400 hands.

Florida, Tampa. It is stated that a large Pennsylvania concern is desirous of establishing a branch plant here, contingent upon the placing of a $30,000 bond issue and other arrangements in connection with the building of a factory, guaranteeing to start with a force of 50 employes and an installation of $45,000 worth of machinery.

Georgia, Columbus. The Meritas Mills, drills and cotton duck, are running overtime to a certain extent, being on a fourteen-hour-a-day schedule this week.

Georgia, Waycross. The prospects are said to be good for the location here of a cotton mill in which outside capital will be largely interested, although definite information is not obtainable.

Illinois, Lincoln. The Commercial Club is considering means of raising $25,000 capital to establish a knitting mill here, having received an offer from a man at present manager of a large concern in the East to operate a plant financed partly by local capital.

Maine, Gardiner. M. E. Heselton, of Gardiner, is named as president and treasurer of the United States Textile Machinery Co., reported incorporated with a capital of $500,000 for the manufacture and sale of cotton, linen, silk, wool and other cloths.

Maine, Oakland. The Oakland Woolen Mills Co., Inc., men's wear, suitings and overcoatings, whose machinery is operated by electricity, are running day and night.

*Maine, Old Town. Until conditions in the textile line change, there will be little done towards pushing the Garland Cotton Mills Co., proposed at this place for manufacture of fine and medium converting goods. The proposed equipment of this plant is about 25,000 ring and 25,000 mule spindles with 1,200 to 1,300 looms.

*Maine, Waterville. I. E. Small, superintendent of the National Woolen Co., who has recently been at the Mills of Albert W. Noone, Peterboro, N. H., lessee of the property, has returned here and it is understood that preparations are to be made to reopen the mill. The plant is equipped with 3 sets and 15 looms for the manufacture of wool specialties, with dyeing, bleaching and finishing machinery.

Maryland, Baltimore. The Maryland Belting & Packing Co. has been incorporated with a capital of $3,000,000, to manufacture cotton duck, belting, packing cotton and leather belting. The incorporators named are Geo. D. Iverson, Jr., Harry C. Lawrence and Chas. C. Eichner, all of Baltimore.

Massachusetts, Adams. The Adams Woolen Co. is busy on its line of men's wear, and is said to be running its carding, spinning and dressing departments until nine o'clock five nights a week.

Massachusetts, Boston. The W. H. Holbrook Co. has been incorporated with a capital of $100,000 to make and deal in cotton, woolen, silk and other fabrics. The incorporators named are Walter H. Holbrook, 138 Lincoln St., president; Herbert F. Hatch, vice-president; Ernest G. Gourd, secretary and treasurer, and Homer Lockwood.

Massachusetts, Boston. The Boston Felt Mfg. Co. has been incorporated with a capital stock of $500,000, divided into 2,000 shares of common and 3,000 shares of 7 per cent. cumulative preferred, to manufacture felts, etc. The incorporators are Nathan C. Harrison, Wm. E. Brand, Edw. O. Kenney, Geo. S. Hobb and Harvey B. Clark.

Massachusetts, Fall River. It is reported that Matthew and William E. Hanscom, manufacturing narrow braids and tapes as Hanscom Bros., at 272 Caroline St., have filed an involuntary petition in bankruptcy, with about $26,000 of unsecured liabilities.

Massachusetts, Fitchburg. The silk mills of Cornforth & Marx are reported very busy on orders and employing nearly 200 hands, the volume of business on hand indicating the necessity of a still further increase in help or overtime work in the near future. The company operates 200 looms on dress silks.

Massachusetts, Lancaster. The Ponikin Mills are reported as operating day and night on rush orders for cotton yarns, which they manufacture on 4,000 ring spindles.

Massachusetts, New Bedford. The Oneko Woolen Mills of the Holden, Leonard Co. are running the weave room until 9.30 three nights a week.

Massachusetts, North Andover. The mills of the Brightwood Mfg. Co., the Stevens Mills and the Sutton Mills, worsted dress goods, are reported running their weaving departments all night, including Saturday night.

*Massachusetts, Rochdale. The auction sale of the Rochdale Woolen Mills property was well attended. The mill realty was purchased by Frank H. Carpenter, in behalf of the American Woolen Co., for $38,000. The village properties realized $53,710. About one-half of these properties were purchased by Mr. Carpenter, the others being sold to a dozen or more separate purchasers. The total amount realized at the first day's sale, including the year's taxes, in round numbers, was $95,000. The price for the mill real estate proper was generally considered to be low, although the village property brought very satisfactory prices, making a fair aggregate for the real estate. On the second day, the machinery was sold in 900 different lots for $68,700, as against an assessed valuation of $70,000, the gross result of the sale being $163,700, which it is stated was equal to the estimate of the owners of the probable result. Frank H. Carpenter was the largest buyer of machinery, and there was a good deal of competition on the lots on which he was a bidder.

Massachusetts, Shirley. The Edgarton Mfg. Co. report a good business, the weaving department being run evenings.

Massachusetts, Webster. The mills of the Merritt Woolen Co. and the Chase Woolen Mills of the American Woolen Co. are running twenty-four hours a day.

Massachusetts, West Stoughton. French & Ward, operating 8 sets of wool cards, 52 knitting machines and 42 looms on eiderdowns, astrachans, stockinet and jersey cloths, report the best business in recent years and are running their carding and spinning departments three nights a week. They dye, bleach and finish and sell direct.

Mississippi, Batesville. The Panola Cordage Co. is reported incorporated with a capital stock of $20,000 to manufacture cordage, yarns and other cotton and woolen articles, by A. S. Kyle, C. B. Vance, J. C. Jarrett and W. M. Keith. C. B. Vance was president of the Batesville Yarn & Cordage Co., whose plant was advertised for sale, fully equipped, as reported in issue of Sept. 22.

Missouri, St. Louis. It is reported that the Chester Knitting Mills of Chester, Ill., are considering the establishment of a factory in the Drummond Mfrs. Bldg. at Fourth and Spruce Sts., and that if the plans are carried out, the company's three plants at Chester, Sparta and Pickneyville will be combined in this one, employing about 300 hands and having a capacity of 1,000 pairs of stockings a day. The company manufactures men's seamless, women's seamless and ribbed and children's and infants' hosiery, doing their own dyeing, bleaching and finishing. The main factory at Chester has an equipment of 415 knitting and 75 sewing machines.

New Jersey, Paterson. It is reported that Anton Schmidt, of New York, has been appointed receiver for the Naef Bros. Co., broad silks. The company's indebtedness is estimated at about $35,000, with nominal assets of practically the same amount.

New Jersey, Paterson. The Collins Silk Co. has made an assignment of its plant in the Broomhead Mill, River St., for the benefit of creditors. Walter R. Hudson has been made assignee, and it is understood will reopen the plant to complete the unfinished work and then endeavor to convert the plant and equipment into cash. The liabilities are placed at about $13,000, with assets of practically the same amount.

New Jersey, Paterson. Brown Bros. are operating a plant in the Hamilton Mill, making broad silks. Their plant is equipped with 18 looms. Sell direct. Harry Brown is buyer.

New Jersey, Rockaway. The Beebe Cordage Mfg. Co. has been incorporated with a capital of $50,000 to manufacture mop yarns, etc. The incorporators are C. Beebe, E. L. Todd, N. A. Beebe and E. H. Todd, all of Rockaway.

New Jersey, West Hoboken. The Union Hill Novelty Co. has been incorporated to manufacture woolen goods, silk and artificial silk.

New Jersey, West Hoboken. The S. Rau Embroidery Co. has been incorporated with a capital of $25,000 to manufacture embroideries, laces, nets, etc. Siegmund and Emma Rau, Weehawken Heights, and Helen Reid, 149 Broadway, New York, are mentioned as interested. Business will be commenced at 512 Stevens St.

New York, Amsterdam. W. W. Shuttleworth, treasurer of the Shuttleworth Bros. Co., body Brussells and Wilton carpets and rugs, has disposed of his interest in the concern and will retire. Arthur W. Shuttleworth is the new treasurer, and Herbert L. Shuttleworth will continue as president and will attend to the buying.

New York, Brooklyn. The Knit Goods Manufacturing Co., now located at 5-9 McKibben St., operate 10 knitting and 8 sewing machines, making jerseys, jersey rompers, aviator caps, etc. This company is capitalized at $20,000. I. J. Natelson is president and W. Natelson, treasurer. Product is sold direct.

*North Carolina, Bessemer City. Although the

Smith Cotton Mills have been sold for $20,000, the distribution of funds is being withheld by the American Trust Co., awaiting order of the Court. It is understood that there is some litigation connected with the property.

*New York, Brooklyn. W. A. Bandler is president of the Angora Specialty Co., which has been incorporated with capital stock of $10,000 succeeding the Angora Fur Co. The treasurer is S. F. Currick; superintendent, A. M. C. Bonnard, and buyer, W. T. Roth. This company is located at 114 Berriman St., and has an equipment of 40 knitting machines and 20 sewing machines, making gloves, mittens, sweaters, fancy knit goods, etc.

New York, Brooklyn. The Long Island Knitting Mills Co. have opened a salesroom at 346 Broadway, Manhattan, and have notified the trade that hereafter they will sell their entire output direct. They are now at work on their sample line of sweaters, cardigans, etc., for the 1912 season.

New York, Brooklyn. Henry Gernshym & Bro., proprietors of the American Knitting Mills, are moving their New York salesrooms from 73 Franklin St. to 366 Broadway, Room 306.

New York, Brooklyn. The New York Knitting Mills Co. has been incorporated with a capital stock of $25,000 to manufacture seamless knit goods. Henry Goldman, of New York City; John H. Meyer, of Brooklyn, and B. A. Lehman, Smithtown, L. I., are mentioned as interested.

*New York, Cohoes. At a hearing in connection with the affairs of the Victor Knitting Mills held on the 3d, the offer of J. A. Brooks of $100,000 for the property not being confirmed, referee authorized the trustees to contract with J. E. Conant & Co., of Lowell, Mass., for the sale of the property at auction on November 14.

*New York, Kinderhook. Herman J. Newman and Henry Schnapper, will take charge of the Kinderhook Knitting Co. on January 1, 1912, when the new proprietorship will be in force.

New York, Kingston. The plant of the Ashokan Knitting Mill, owned by the H. W. Otis Co., is still idle, but the owners are ready to start it up at any time when they can find an up-to-date, experienced ribbed underwear superintendent who is willing to put a small amount of money into the property.

New York, Lestershire. It has been reported that Messrs. Wm. G .and Gilbert H. Faatz, president and director respectively, have withdrawn their interests in the local mill of the Felters company and will retire from connection with the company. It is understood that their interests have been purchased by others connected with the company and that the business will be continued as before. The Felters Company operates other plants at Millbury, Mass., and Middleville, N. Y.

New York, Long Island, Corona. The Fritz Ammendorff Knitting Works, previously located at 194 Corona Ave., are now established at 5 Central Ave. This plant is equipped with 5 knitting and 4 sewing machines, for making sweaters, bathing suits and cardigan jackets, ladies' sweater coats, etc.

*New York, Mohawk. The Mohican Knitting Co. is the new company now operating the plant formerly operated by the Muldoon Underwear Co. This company has been reorganized by Richard Irvin & Co., of New York, who have not quite settled plans regarding financing of the company, nor election of all the officers.

*New York, New York. The Edmund Church Company has been incorporated with capital stock of $5,000 to continue the plant formerly known as the Alden Knitting Co. E. F. Church is president and treasurer of the company. This plant is run on men's silk neckwear and mufflers. Product is sold direct.

New York, New York City. The Phillips Knitting Mills are reported incorporated with a capital stock of $6,000 by Harris I. Phillips, 103 Division St.; Robert Lowenstein, 439 Manhattan Ave., and Samuel Levine, 555 West 151st St.

New York, New York City. The Progressive Broad Silk Mills have been incorporated with a capital of $50,000, to manufacture silks and other textiles. Those named as incorporators are Godfrey Widmer, 506 14th Ave., Paterson, N. J.; Wm. Passman, 1409 St. Mars Ave., Brooklyn, and S. J. Jackson, 2 East 28th St., New York.

*New York, Phoenix Mills. The Utica Knitting Co., which controls the plant of the Fennimore Knitting Mills, under lease, have not yet determined whether they will renew lease and continue operations for another year or not. The plant was closed by them recently owing to the high price of raw material.

New York, Stuyvesant Falls. The Crescent Knitting Mills, Chas. L. Ashley, proprietor, are running night and day on goods for winter wear, and the Frisbie Mfg. Co., cotton goods, are running their 15,000 spindles and 392 looms on full time, having orders for some months ahead.

New York, Watertown. The Ontario Cotton Co. has been incorporated to deal in raw cotton and manufacture and deal in cotton fabrics, etc. Sherman H. Davenport and Geo. S. McCartin, of Watertown, are among the incorporators named Capital stock, $100,000.

New York, Whitesboro. The Anchor Knitting Mills of Robert Ablett are running in full with extra help, and the Alliance Knitting Mills, Chas. A. Powell, proprietor, are operating with a day and night force. The outlook is for a continuance of these conditions through the winter.

*North Carolina, Charlotte. The plant of the Continental Manufacturing Co. is being dismantled. This mill was formerly run on cotton yarns.

*North Carolina, Draper. It is reported that foreclosure of a deed of trust to the New York Trust Co., securing $400,000 of bonds of the German-American Co., has been signed, and it is reported that the sale of the property has been ordered. The report of E. D. Pitcher, treasurer of

the German-American company, who is acting as receiver, as previously noted, places the liabilities at over $1,000,000,with assets of less than half that amount.

*North Carolina, Haw River. The plant of the Trolinwood Mfg. Co., recently sold to the Greensboro Life Insurance Co. of Greensboro, is not in operation. For some time previous to sale the mill was operated by the receiver.

North Carolina, Kannapolis. The Patterson Mfg. Co., operating 400 looms on brown sheetings, have begun operations on a night schedule.

North Carolina, Mariposa. The Mariposa Cotton Mills are reported incorporated with a capital of $50,000, $37,000 paid in, with the following incorporators: A. O. Morrison, of Atlanta; Mrs. Jennie Morrison and R. H. and J. G. Morrison, of Stanley; Mary G. Raynall, of Statesville, and Ronald and Annie Wilson, of Brevard. R. H. Morrison has been president and buyer of the Mariposa Cotton Mills, which will be taken over. It is said that no improvements will follow this incorporation. Two-ply warps and yarns are manufactured on 3,264 ring and 1,600 twisting spindles.

*North Carolina, Morganton. Nothing has yet been done concerning establishment of the knitting mill proposed some time ago. This is the plant in which Garrow Bros. of the Waldensian Hosiery Co., Valdese, were mentioned as interested.

*North Carolina, Salisbury. The Hambley Mfg. Co., which was reported incorporated some time ago, to manufacture damasks, has been dissolved. Gilbert F. Hambley was the treasurer of the new company.

*North Carolina, Weldon. Arrangements have about been concluded for the sale of the machinery of the Balfron Knitting Co., whose plant has been idle for some time. The affairs of the company are in the hands of a receiver. The mill was operated for only about a year, and had an equipment of 40 knitting and 70 sewing machines, with dyeing and finishing machinery, for the manufacture of cotton underwear.

Ohio, Ashtabula. At the instigation of the stockholders, the Courts have appointed State Senator McDonald receiver of the Ashtabula Worsted Mills. The plant is now shut down for the purpose of taking account of stock, but is expected to start up again after a reorganization of its affairs have been made. The plant contains 2 combs, 2 cards, 3,000 worsted spindles and 120 broad looms, which they operated on yarns, worsted dress goods and suitings, dyeing and finishing.

*Ohio, Byesville. The Snag Proof Hosiery Co., which was reported closed earlier in the year, have not yet resumed operations, nor has new location been secured.

*Ohio, Cincinnati. The Cincinnati Commercial Association advises us that the project of establishing a textile factory here, as was reported in August, has not yet developed.

Ohio, Cleveland. The Rose Knit Goods Co. has been reported incorporated by Henry A. Beckerman, Fred S. Silverbach, Jos. G. Engelman, N. C. Beckerman and S. J. Deutsch.

*Ohio, Piqua. The Superior Athletic Underwear Co., recently incorporated with capital stock of $50,000, will make men's nainsook, madras, batiste and other grades of woven cloth union suits. J. L. Black is president of the company and J. P. Spiker, treasurer and buyer. Goods will be sold direct. This is an entirely separate concern from the Superior Underwear Co., located at this place and making knit goods only.

*Pennsylvania, Allen. The plant of the Allen Knitting Mill remains idle and is for sale.

Pennsylvania, Aston Mills. The plant of the May Manufacturing Co., manufacturers of cotton worsteds and piece dyes, with 24 sets and 394 looms, which has been shut down for several months, will be sold out at public auction on Oct. 30th. The sale will consist of the equipment of the mill, the building and 115 dwellings, all belonging to the company.

*Pennsylvania, Auburn. W. H. Diefenderfer will continue operating the mills at this place under the name of the Auburn Knitting Mills. No changes whatever will be made in the plant.

Pennsylvania, Bethlehem. At a meeting of the creditors of Fichter & Martin, broad and tie silks, held in New York, a committee was appointed to investigate the status of the firm and to consider an extension of six months' time asked for by the firm in which the business may be liquidated. Fichter & Martin are understood to be nominally solvent, but have been unable to meet maturing obligations because of the fact that a large part of the assets are tied up in plant and machinery. They suggest a plan to work off the stock on the looms and the sale of the plant to the Bethlehem Silk Co.

*Pennsylvania, Bloomsburg. The Magee Carpet Co. has not yet started to erect the new addition mentioned last April to be built. The matter is in contemplation.

*Pennsylvania, Boyertown. Nothing has been done about the glove manufacturing plant which was reported contemplated at this place last July.

Pennsylvania, Catasauqua. The Catasauqua Silk Company, with a capital of $15,000, has received its charter. What the company will manufacture or its equipment has not been stated.

Pennsylvania, Chambersburg. The Chambersburg Hosiery Co. has gone on a full time schedule of ten hours a day. Max Leiberman has been made superintendent of this as well as the company's plant at Fort Loudon. Women's seamless cotton hosiery, 136, 176 and 200-needle, is made on 280 knitting machines and 55 ribbers.

Pennsylvania, Chester. The Crum Lynne Processing Company, located at 3d and Garfield Sts., is in full operation, mercerizing, dyeing and finishing fine cotton piece goods. Percy Watson is agent and superintendent of the plant.

New Publications

[Any work noticed under this head can be obtained through the office of this journal.]

Hendricks' Commercial Register of the United States for Buyers and Sellers; 1,419 pages, 7 1/2 by 10; S. E. Hendricks Co., 74 Lafayette St., New York, N. Y.; price, $10.00.

The 20th annual edition of this work has been received, being fully up to the usual standard in compilation, printing and binding. A new system of indexing is used in this edition, which contains over 350,000 names and addresses and 45,000 classifications representing manufacturers or dealers in the architectural, engineering, electrical, mechanical, machinery and tools, railroad, mining and kindred industries, arranged for the use of both buyers and sellers and in such a manner that it can be used for either mailing or purchasing purposes. The manufacturers of a particular trade are classified under a general heading for mailing purposes. This general classification is then subdivided into the different branches of the industry, and under each subdivision are included the concerns which specialize in those products. The index itself comprises 108 pages and its different headings include about everything that can be thought of in the way of manufactured products in the lines mentioned.

The Principles of Bleaching and Finishing of Cotton; by S. R. Trotman, M. A., F. I. C., and E. L. Thorp, A. C. G. I., A. M. I. E. E.; 347 pages, 6 by 9; J. B. Lippincott & Co., Philadelphia, Pa.

The introductory chapter of this work deals with the structure of the cotton fiber. This is followed by chapters on the constituents of cotton, cotton testing, the carbohydrates, water, bacteria in bleaching, cotton piece goods, steeping, transmission of cloth, alkali boiling, materials used in lye boiling, soap, soap making, organic solvents, kiers, washing machines, bleaching and bleaching powder, chemicing and souring apparatus, sodium hypochlorite and electrolytic bleaching solutions, other bleaching agents, souring or treatment with acids, processes, colored goods, stains and discolorations, finishing and the materials used in finishing, mangling, dry and conditioning, stiffening, stenters, beetling, calendering, and combined finishing processes.

The work deals with both the chemical and mechanical branches of bleaching and finishing. It is freely illustrated and contains a large amount of useful information well arranged and indexed. Both the manufacturer and student will find it a valuable book.

Wood Pulp and its Uses; by C. F. Cross, E. J. Bevan and R. W. Sindall, with the collaboration of W. N. Bacon; 270 pages, 5 1/2 by 8; D. Van Nostrand Co., 23 Murray St., New York. Price $2.

In preparing this work the authors have aimed to give a general account of the evolution of the wood pulp industries in a form suitable for the general reader. The following abstract of the table of contents shows its scope: The Structural Elements of Wood, Cellulose as a Chemical Individual, Wood Pulp in Relation to Sources of Supply, The Manufacture of Mechanical Wood Pulp, Chemical Wood Pulp, News and Printings, Wood Pulp Boards, The Utilization of Wood Waste, Testing of Wood Pulp for Moisture, Wood Pulp and the Textile Industries, Specimen Pages. The book contains a number of excellent illustrations and the authors are a guarantee of the accuracy of the work.

Color Mixing and its Practical Application (Die Farbenmischungslehre und ihre praktische Anwendung); by Carl Mayer; 83 pages, 6 1/2 by 9 1/2; Julius Springer, Berlin, Germany. Price $2.

This is a study of the theory and practice of mixing colors for the various arts and industries. The author begins with a chapter on the various shades and color materials. Next comes a chapter on the three color method of printing. This is followed by chapters on dark and light shades and the nomenclature of colors. This completes the study of the theory and the second part is devoted to the practical side of color mixing. It first takes up the production of mixed shades, and this is followed by a chapter on the analysis and synthesis of colors. The concluding chapter gives the formulae for producing shades on twenty-one cloth samples which are mounted on six sheets in the book. There are plates illustrating the printing in four colors, each color being given separately and also the four combined. There are also tables showing various colors and shades. The text is in German.

Journal of the Manchester (Eng.) School of Technology, The Textile Society. Vol. 3. Price 5s.

We have received a copy of this journal for the session of 1910-11. It contains the following articles: The Costing of Plain Cloths, Dacca Muslin, Experiences in the Installation of Textile Mills, Atmospheric Influence on Size and Sizing of Cotton Yarns, Testing of Power Consumed in Driving Looms, Effects of Bleaching and Mercerizing on Cotton Yarns, The Application of a Flywheel to a Mule Countershaft, Cotton Mill Insurance, The Examination and Testing of Cloth, The Effect of Bleaching on Twist Yarn, Experiments in the Scutching of Cotton, Some Recent Mechanical Systems of Preparing Yarns for the Loom, The Gassing of Yarns, Silk Throwing and Spinning of Raw Silk, Fancy Smallware Weaving.

BUSINESS LITERATURE

Heating and Ventilating; The Green Fuel Economizer Co., of Matteawan, N. Y.

A 94-page catalogue containing information required for the designing and proportioning of hot blast outfits for heating, ventilating, drying, etc.

The book contains some two or three dozen tables of temperatures required in rooms for various purposes; heat transmission through building materials; heat given off by occupants and by lights; standard sizes of hot-blast heaters; frictional resistance of air washers; relative humidities; humidities and temperatures throughout the United States; amounts of air required for ventilation; equivalent air pressures. Another chapter gives the result of an extensive series of tests upon Green's Positiv-flo steam heating coils, by means of which heaters of suitable sizes may be selected for any given duty. The general illustrations of the book include not only views of buildings equipped with heating and ventilating apparatus built by the Green Fuel Economizer Co., but also detailed plans, elevations and "ghost" views showing the actual arrangement of the fans, heaters, piping, outlets, etc. Copies of this book may be had on application.

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A Steam Turbine for Driving Direct Current Generators; The DeLaval Steam Turbine Company of Trenton, N. J.

A 32-page pamphlet describing and illustrating the different types of steam turbines and their comparative merits. It takes up the topics of steam and bucket velocities; different methods of speed reduction by means of velocity stages, pressure stages, combinations of the two and by means of gears; the peculiarities of turbo-generators; and turbine-driven direct-current generators; and other matters connected with the compromise which must necessarily be effected between the speed of the spouting steam and the best speed of the driven unit. The DeLaval Multi-stage Geared Turbine, as applied to driving direct current generators and to the direct driving of centrifugal pumps, blowers and air compressors and for rope or belt transmission. Copies of this pamphlet will be sent upon request to those interested.

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Pumps and Condensers; the Dean Bros. Steam Pump Works, Indianapolis, Ind.

A 64-page catalogue describing and illustrating a few of the standard styles and sizes of the Dean steam and power pumps, jet and surface condensers.

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Industrial Notes

NEW BOSTON OFFICE

The Geo. D. Mayo Machine Co. and Scott & Williams, Inc., have removed to new quarters at 88 Pearl St., corner of High, in Boston, where they occupy the whole of the third floor, with an area of over 15,000 square feet. Here they have consolidated their experimental, drafting and show rooms with their offices.

The arrangement has been exceedingly well planned, and the many windows on both streets give an unusual opportunity for commodious office rooms, well lighted bookkeeping department and drafting rooms. Back of the reception room is an exhibition room where the various types of machines are displayed, with the goods that may be made on them; in the rear, and occupying a large part of the floor, is the experimental room, which will be equipped with every modern appliance to carry on the development under the eyes of the officers of the company and convenient for their own experimental work.

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RECEIVED HIGHEST AWARD

The Hess-Bright Manufacturing Company of Philadelphia, makers of ball bearings, announce that they have received word from the Deutsche Waffen und Munitionsfabriken, for whom they are importers, that this German company have just been awarded the "Gran Premio" at the International Industrial and Trade Exhibition of Turin, this being the highest distinction.

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STEPHENSON'S BAR BELT DRESSING

The convenient form in which this dressing is supplied, as well as the satisfactory results obtained through its use, makes it a favorite with textile mills. It is put up in sticks, or solid form, in lots of twelve, thirty, fifty and one hundred one-pound sticks to the box. Being in solid form, there is no waste in applying it to the belt, as the friction effects an even distribution of the least quantity necessary to prevent slipping. This brand of bar belt dressing has been on the market for twenty-three yars, and naturally has been imitated, so it is well to look for the registered trademark, and ask for the Red Label for leather belts and the Green Label for rubber or canvas. To those who are not familiar with this popular preparation, the Stephenson Mfg. Co., of Albany, N. Y., will send a free sample of either brand, postage paid, on receipt of a two-cent stamp.

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A PROSPEROUS BUSINESS

The Goulds Manufacturing Company of Seneca Falls, N. Y., manufacturers of pumps, reports that its business now is running at only a slightly lower rate than last year, which was the highest in the history of the company. A representative says: "This year's business in hand pumps and small machinery is the largest we have ever had, while our business in the large power pumps and heavy machinery is slightly lower than it was last year. As has been the case for several years past, our export business is good and showing a steady increase."

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THE ARABOL MFG. CO.

Besides the standard compounds, the Arabol Manufacturing Co., 100 William St., New York, manufacturers sizing, finishing oils and other compounds that meet individual and specific wants. Their experts specify the proper material to meet the particular requirement of a manufacturer, and they invite correspondence.

MODERN BELT METHODS

In Prof. Goodman's text "Mechanics Applied to Engineering" it is shown that if properly lined up a solid shaft with ordinary bearings would transmit power a distance of 6,000 ft. with an efficiency of 80 per cent. when all forces are purely torsional. With belts, in which bending and torsion are necessarily combined, that distance drops to 400 ft. Still, 400 ft. is a much greater distance than is accomplished by shafting under ordinary conditions with an efficiency of 80 per cent. An efficiency of 60 per cent. is high. It is not uncommon to allow a 50 per cent. loss of power in the shafting of many modern machine shops. In the old days (which weren't many years ago when the subject is belts), it was thought that to insure the best belt transmission the belt tensions must be high. Engineers can be found today who still think so, and they will back their arguments with intricate formulas in which tensions are shown as important factors.

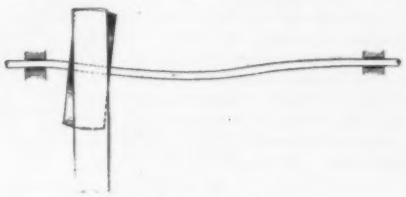

FIG. 1.

Many belt drives are arranged as shown in Fig. 1, with only one hanger to give rigidity to the driven pulley. The enormous tensions in a tight belt are sufficient to deflect the shafting considerably. In practice the deflection is not as marked as is shown here, but the slightest deflection seriously affects the transmission efficiency as Prof. Goodman forcibly indicates. In operation the shafting maintains that form, and the friction, both internal and in the bearings, increases with the amount of deflection. It is necessary then to reduce the belt tension as much as possible, and the best way to do this effectively is to treat the belt properly.

Assuming that belt tensions are necessary, but knowing that in operation one side can run slack or easy, suppose a tension of 200 pounds is needed by a belt according to the formulas used by some engineers. Suppose that tension is nicely adjusted

FIG. 2.

when the thermometer registers 70° F., and the humidity is low. The belt drives satisfactorily; that is, it does not slip. The next day the temperature rises and the humidity increases. Both are factors that lengthen nearly all belts; in fact, all belts composed of vegetable substance with the possible exception of rubber. This destroys the fine adjustment made on the previous day. The belt treatment is imperfect. The belt slips. Besides, if the weather conditions hadn't changed, the belt would have stretched slowly and a new adjustment would soon have to be made anyway.

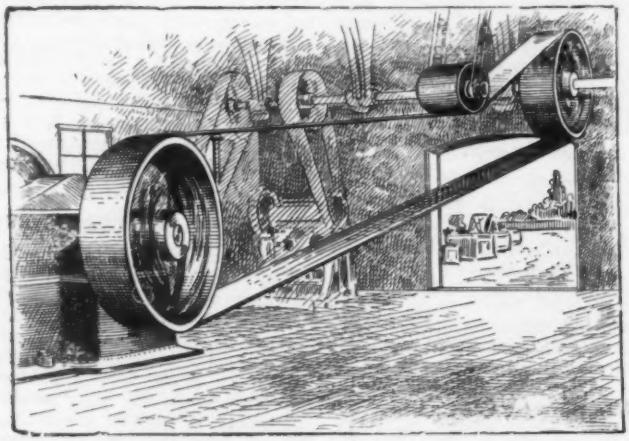

FIG. 3.

In tropical regions some belts have been known to change six inches in length in one day for the reasons just mentioned. Humidity is the principal cause of trouble when the belts are not waterproof. Where slight initial tension is needed the

belt must therefore be waterproof to give the best results.

Ordinary leather belts can be made immune to damp or steamy surroundings or to the actual slopping of water on the belts, by proper application of Cling-Surface. The belt efficiency is increased because the bending qualities of the belt are improved, the belt is made flexible and slipping is prevented.

A belt with riveted joints, treated with Cling-Surface, is claimed to be made absolutely waterproof and could be run submerged in a water pit. This has been proved in instances where for several days, floods buried belts treated in this manner. The preservative treatment rendered them immune in even such severe cases. A cemented belt, excepting the edges of the seam, is also waterproof, and though it might not withstand prolonged submerging, it will successfully resist dampness and steam.

QUALITY IN BELTING

"How much off the list?" How often that question enters into the choice of leather belting. The first cost on which a small saving has been effected is thought to add one more trophy towards the reduction of factory expenses. A cheap article is not always an expense reducer, especially when it pertains to motive power and there is nothing that can cause such a hinderance to a maximum output in connection with power transmission as an inferior belt. Time is wasted, machinery temporarily stopped, and production consequently decreased. Cheap belts can be produced by any maker as the market is always abundantly supplied with leather for their production. There is no secret as to how they may be manufactured and the ever present question of, "How much discount can you give?" has a tendency to lower the quality.

Leather as a commodity is sold by the pound while belting is sold by the foot, hence a reduction in its weight is a factor in reducing its cost. The best leather and the poorest, with all the intermediate qualities are found on the same hide. All parts have their uses, but a selection and proper apportionment must be made. For good belting only a small portion of the hide should be utilized, and this part manipulated by competent workmen and the right kind of machinery.

Insufficient stretching is frequently the cause of much annoyance and delay, while another so-called economy causes those unsightly crooks which many belts develop.

Among the producers of high grade leather belting is the Van Riper Manufacturing Company, of Paterson, N. J. It is stated they have been in business longer than any other firm in New Jersey and the fourth generation takes pride in the record which dates back to 1796, when one line of business which they are still carrying on was founded by the great-grandfather of the same name. The manufacturing of belting was begun over sixty years ago.

This company sell their belting on its intrinsic merits and publish a reduced net graduated price list for the various widths based on the respective weight of the belts they manufacture. They are of a strictly short lap quality and thoroughly stretched. Only the solid portion of the leather is used. The price list can be obtained on application.

"SILK"

The Silk Publishing Co., 17 Madison Ave., New York, announces that beginning with the October issue, "Silk" will be issued by this new company, whose offices are located at 17 Madison Ave. Daniel S. Mercein, who has been associated with "Silk" since its establishment as editor, is president of the new company and will continue to act as editor.

THE SELAS LIGHT FOR THE MILL

The Selas light was introduced from abroad about a year ago and has found many friends in the textile industry because of its adaptability for mill lighting. Selas light is white like daylight and colors can be recognized just as well as in the natural light. Shadows are avoided and it is absolutely steady. On account of these qualities it

THE SELAS LIGHT

appeals greatly to the employes in the mill and factory. Owners and managers who are interested in the cost of lighting have found that the Selas light reduces their bills considerably and that the output of work in this light shows no falling off in quality or product as compared with daylight. Selas is an old principle applied to practical use and it has proven its usefulness in thousands of plants. The Selas Company, 90 West St., New York, will give expert advice in any lighting question and inquiries regarding this system of lighting are solicited.

THE PRICE-CAMPBELL COTTON PICKER

It is stated that the Price-Campbell Cotton Picker Corporation has sold all the machines they have for delivery this year in Texas, but they have reserved one machine that will be continuously at work in the vicinity of Charlotte until the end of October. Several excursion parties from New York have been planned for the purpose of visiting Charlotte at this time to see the machine in operation.

Recent Textile Patents

CLOTH CUTTING Machine. 1,004,285. Hyman Maimin, New York.

DRAWERS. 1,006,432. Ezra W. Carter, Cohoes, N. Y.

DYEING. 1,006,097. Myrtil Kahn and Anton Ossenbeck, Elberfeld, Germany.

DYEING APPARATUS. 1,004,486. William R. Smith, Buffalo, N. Y.

DYEING FABRICS. 1,005,888. Adolph Rutler, Sunbury, Pa.

EMBROIDERING Machine. 1,004,912. Albert Russell, New York.

EMBROIDERING Machine. Jacquard Patterngear for. 1,005,436. Johann J. Knecht, Chemnitz, Germany.

EYELET-MANUFACTURING Machine. 1,005,622. Louis P. Eisenbeis, Ottumwa, Ia.

FABRIC GUIDING and Gaging Device. 1,005,814. Albert H. De Voe, Elizabeth, N. J.

FIBROUS MATERIAL. Embossed. 1,005,059. F. W. Moore, Newark, N. J.

KNIT GOODS. Machine for Running on. 1,006,305. William E. Smith, New Brunswick, N. J.

LOOM. 1,006,228. John W. Kirkus, Shawmut, Ala.

LOOM BEAM. 1,004,584. Frank Mossberg, Attleboro, Mass.

LOOM. Hand. 1,004,079. George L. Reed, Springfield, Mass.

LOOM SHUTTLE Check. 1,005,159. John B. Cloutier, Saco, Me.

LOOM SHUTTLES. Automatic Refilling Device for. 1,005,017. Johannes Gabler, Isselhorst, Germany.

LOOM TAKE-UP. 1,006,015. William S. Southwick, Worcester, Mass.

LOOM. Weft Replenishing. 1,005,322. Eppa H. Ryon, Waltham, Mass.

LOOMS. Device for Securing Bobbins to Shuttles for Weaving. 1,006,441. Henri Dansette and Albert Dazin, Lille, France.

LOOMS. Driving and Lay Motion for. 1,006,110. Albert Mann, Philadelphia, Pa.

LOOMS. Holding and Releasing Device for Bobbins in Magazines of Weft-replenishing. 1,005,321 Eppa H. Ryon, Waltham, Mass.

LOOMS for Weaving Tufted Fabrics. Tuft Yarn-carrying Spools for. 1,005,603. Thomas Cooper, Kidderminster, England.

SHUTTLE. 1,004,656. Wesley S. Judy, Dayton, Ohio.

SHUTTLE Attachment. 1,006,400. Giuseppe Pavia, Allentown, Pa.

SPINNING or Twisting Frames. Adjustable Tension for Bobbins for. 1,004,342. John E. Barbour, Paterson, N. J.

SPINNING or Twisting Machines. Thread-guide for. 1,006,126. John E. Prest, Melrose, Mass.

SPINNING Machine. Ring. 1,005,877. Charles Renshaw, Blackburn, England.

TEXTILE Fabric. Reinforced. 1,004,622. Zebina S. Blackadar, Whitman, Mass.

THREAD CUTTER. 1,005,604. John W. Cowell, Los Angeles, Cal.

WARP STOP Motion. 1,006,386. Arthur Kean, Boston, Mass.

WINDING and Measuring Machine. Warp. 1,005,823. George W. Foster, Lowell, Mass.

APPLICATIONS FOR REGISTERED TRADE MARKS

These applications have been officially published by the U. S. Patent Office, so that any person who believes a registration would interfere with established rights, may have an opportunity to object within the specified time.

55,659. For floss, yarns and threads. Mark: Artamo. Owner: Bentley-Franklin Co., New York.

58,296. Absorbent cotton and dental floss. Mark: A. P. C. Owner: Aseptic Products Co., New York.

44,662. For hosiery. Mark: Phoenix. Owner: Phoenix Knitting Works, Milwaukee, Wis.

48,048. Silk piece goods. Mark: Spunella. Owner: Spunella Co., Ltd., London, England.

49,759. Dress shields. Mark: Gloria. Owner: I. B. Kleinert Co., New York.

53,280. Dress ginghams. Mark: R. M. Co. worked in a design. Owner: Roberdel Mfg. Co., Rockingham, N. C.

54,109. Knit underwear. Mark: J. S. K. Owner: John K. Stewart & Sons, Amsterdam, N. Y.

54,746. Men's and boys' outer clothing. Mark: W. R. Owner: The W. & R. Manufacturing Co., Portland, Me.

56,461. Linen, cotton, woolen and silk piece goods. Mark: Elton Mills. Owner: D. W. C. Ellis & Co., Inc., Philadelphia, Pa.

56,856. Hosiery. Mark: Flat cardboard with needle running through it. Owner: Alfred J. Boning, Boston, Mass.

56,968. Linen, cotton, woolen and silk piece goods. Mark: Elton Mills. Owner: D. W. C. Ellis & Co., Philadelphia, Pa.

57,295. Silk bolting cloth. Mark: Elcelsior. Owner: American Mfg. Co., New York.

57,390. Woven cotton plaids. Mark: Cibaeno. Owner: Neus, Hesslein & Co., New York.

57,568. Cotton piece goods. Mark: White pine. Owner: Massachusetts Cotton Mills, Lowell, Mass.

57,579. Rugs of textile fabrics. Mark: Lincord. Owner: George F. Penny, Philadelphia, Pa.

57,611. Cotton goods in the piece. Mark: Barathette. Owner: Bedford Mills, New York.

57,715. Undershirts and drawers of textile materials. Mark: Vindex. Owner: Oppenheim, Oberndorf & Co., Baltimore, Md.

57,769. Oriental rugs. Mark: Samdoruco. Owner: Samuel Donchian Rug Co., Hartford, Conn.

57,810. Silk and cotton mull. Mark: Flashing. Owner: Carson, Pirie, Scott & Co., Chicago, Ill.